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THE DIVIDION OF HORTICULTURAL CROPS AND DISEASES

SEMI MONTHLY NEWS LETTER

The official organ of the Division of Horticultural Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.

John A. Ferrall, Editor

This NEWS LETTER is for distribution only to employees of the Division, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Horticultural Crops and Diseases. The reports of field workers, of course, represent their personal opinions and are not necessarily the official and final word on the subjects which are discussed.

Vol. V Washington, D. C., January 2, 1933 No.1

The New Year January 1 is the beginning of a new year for most folks, but it is just the half-way mark in the Fiscal Year of the Federal Worker, and for us this particular year, it marks the beginning of a six months' period likely to be something of a nightmare to many of our project leaders. The severe cuts in appropriations, felt keenly during the July-December period, become actually painful from now on. Not only must every expenditure, whether for travel, hire or labor, supplies for office or field use, telegraph, express, etc. be scrutinized with care to see whether it is absolutely essential, but we must watch with extraordinary care our allotment of blank paper, since we are limited by law to 60 per cent of the amount used last year. We actually will not be able to supply Department calendars to our field stations this year.

Some years ago when General Lord was director of the Budget Bureau, an official complained to him about the cut in his appropriation, saying: "But a cut like that will seriously interfere with my work. What am I going to do?" The only sympathy he received from General Lord was a story about a lady making her first trip across the ocean. She sent for the colored steward and asked: "What am I going to do if I am taken sick?" The steward had a prompt answer: "Lady," he said, impressively, "it aint no use telling you what you're goin' to do if you get taken sick. You're going to do it anyhow." So we shall manage in some way or other--this being merely a caution, a storm warning. "Parents who tell their children that spinach will give them strength," insists a newspaper columnist, "should give them the rest of the story--that spinach will supply them with grit, too." Well, we may as well add spinach to our diet, because these next six months are going to require all the grit we can command!

And whether normal prosperity returns by leaps and bounds, or as the humorists say, by hops, our clients, the American farmers and fruit growers, still face pretty much of a problem, too. But there is a possibility in their case that the economy idea may be carried too far, and that is something for which our workers who are in close contact with growers must watch.

Some months ago John C. Dunegan told in one of his reports of an inspection trip through orchards in the Fayettsville, Ark. section, and expressed the opinion that the growers in their campaign to reduce production costs might be going to extremes. He questioned, for example, whether there had been enough attention given to spraying and care of the trees to insure disease-free fruit, for one thing.

"In times of great religious decay," commented the Southern Agriculturist sometime back, "it is not unusual for those suffering most to stone the prophets. Of course, at a time like this, wisdom dictates that they should rally to their prophets and give them unusual support. But often people in distress do the things they ought not to do, and leave undone the things they ought to do. Hence they go from bad to worse instead of getting on the road that leads them out of the wilderness. The county agent is the farmer's prophet. At times like these the farmer needs all the expert knowledge he can get. Expenses must be cut down, and economies must be adopted. But it is bad economy to dismiss your leader at a time when you are most in need of his leadership. In prosperous times it is difficult for the agent to bring about changes in methods of farming that would mean real profit to the farmer. While farmers are doing well they are slow to make changes, even when they give promise of substantial gain. But farmers are now anxious to receive instructions in anything that promises improvement. Hence the work of the county agent will bring larger results in lifting the community to a higher plane of efficiency than it could possibly do in normal times."

Our workers who come into close contact with growers have something of the opportunity sketched for the county agent, and warnings such as Mr. Dunegan issued to his people are apt to save many regrets. Indeed, it may be that this depression may offer us the best opportunity we have ever had to emphasize the value of agricultural research, to introduce better varieties, to secure the adoption of improved methods, to arouse interest in new and non-competitive crops, etc.

"The farmer, for instance, who 'gets by,' suffers the assistance of the engineer, the chemist, the transportation expert, the soil analyst and the intensive cultivation expert," says a high official of the United Fruit Company. "The good farmer welcomes them; the excellent farmer in addition to welcoming them makes definite contribution to the common objectives--more production per unit of area, better quality at lower cost of production reduction of transportation costs...,

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FRUIT AND NUT PRODUCTION

H. L. Crane, Albany, Ga.

"On the station farm the harvest of the pecan crop has been completed," he wrote November 26. "The crop was the smallest this year that it has been for the past nine years, due to the very heavy crop and extreme drouth of 1931, and to very severe infestation of stink bugs and shuck worm during the summer of 1932.

"During the week several samples of pecans were received at the office. These nuts were fairly well filled but the shucks still stuck tight to the shells. In some cases the embryo had started to grow. This would seem to be a case of arrested development of the nuts, followed by vegetative growth of the shuck and embryo probably caused by the heavy rainfall and warm weather experienced during late fall."

B. G. Sitton and J. L. Pelham, Shreveport, La.

"Nuts were harvested from plots in the Fullilove orchard. Most of these trees have been partially harvested twice previously and this time effort was made to get all the nuts but rain interfered the latter part of the week so we did not quite finish. Nuts harvested to date total slightly over 15,000 pounds, and there is about 500 pounds more to be harvested. In 1930, we harvested slightly over 16,000 pounds and in 1931 slightly over 26,000 pounds from the same trees. Harvesting on all the other experimental plots has been completed." December 10, 1932.

Elmer Snyder, Fresno, Calif.

"The major portion of the week was spent at the Oakville Experiment Vineyard," he reports December 10. "Results obtained in the propagation tests with Phylloxera resistant root stocks were tabulated. Top growth weight records were obtained from the individual rootings. The rooting percentage of 42 resistant root stocks were obtained.

"Plans were made concerning the winter operations at the various vineyard plots in California. The various grape cuttings needed for distribution, propagation, nursery, and nematode studies were listed in order that they might be obtained from the different vineyard plots as the pruning work progresses....

"Seeds planted in the greenhouse on November 15, were showing growth above the soil in twenty days. Considerable numbers of seedlings are showing the first real leaf at this time."

CROP PHYSIOLOGY AND BREEDING INVESTIGATIONS

A new date region and new variety discovered in Ariz.

On his way from California to Alabama last fall to study the large collections of early-ripening Satsuma orange strains in the Gulf Coast region, Dr. Walter T. Swingle had the opportunity to see a little-known cooperative date garden at Aztec, Ariz..

Aztec is a water station for the very numerous Southern Pacific freight trains needed to transport lettuce and muskmelons from the Imperial Valley, and oranges, lemons and other fruits and vegetables from the Southern California section. It is in the Gila River Valley, midway between Yuma and Phoenix.

Some ten or twelve years ago an enterprising official of the Water Supply Department of the Southern Pacific Railway, secured a number of date offshoots and planted them near the giant water tank at Aztec. An offshoot of the Deglet Noor date was added to this collection by our Division, Doctor Swingle's interest in the test being keen. For several years past, a number of the palms in this collection have been bearing fruit, and this year he had an opportunity to study the collection as early as the end of August--when the early and mid-season varieties were beginning to ripen.

The Deglet Noor fruit, although scanty because of the presence of numerous large offshoots that prevented heavy fruiting, was of excellent appearance and was at that time in the best possible stage of development to insure its ripening after the hot weather of September had passed--a matter of great importance with this leading date variety.

Weather records of long standing, taken at the Southern Pacific station at Mohawk, only 19 miles west of Aztec, show that the temperature and rainfall are very favorable to date culture and such as to permit the Deglet Noor and other choice late rain-and-moisture-resistant varieties to ripen there. It now appears that the climate is such as to induce ripening of the Deglet Noor at the most favorable climatic season, when high temperatures are past.

The lower Gila valley from Welton to Gila Bend rises slowly from 257 to 737 feet, and lies in a region of very scanty rainfall, which is also protected against humid winds from the Gulf of California by wide sweeps of desert mesas, crossed by low, stony mountain ranges.

Doctor Swingle also saw in full fruit a very promising rain-resistant date which at first glance seemed to be the famous braim variety, but which upon further and more careful study by Roy W. Nixon appears to be slightly different. It is perhaps a seedling of the Braim variety.

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

W. T. Pentzer, Fresno, Calif.

"Since making the last report the activities of the personnel here have been confined part of the time to being on the wrong end of tooth-pulling jobs and the fighting of flu germs," he writes December 9. "Now that the shipping season is over, there is little to report of general interest concerning the San Joaquin valley except the weather, which has continued dry until this morning. We are not getting some rain, hail and snow, and hope it will last a week or two.

"One of the most significant happenings the past week so far as the fruit industry of the State is concerned, has been merger of the Earl Fruit Company with the California Fruit Exchange. The former company handles about 10,000 cars of deciduous fruits, and the latter about 15,000 carloads. The Earl Fruit Company is moving its offices to the Fruit Exchange Building in Sacramento, and the plan is to use the marketing facilities of the California Fruit Exchange, but to retain some members of the Earl selling staff. The California Fruit Exchange markets its fruit through representatives of the Citrus organization--the California Fruit Growers' Exchange. It is expected that the pooling of the interests of the Earl Fruit Company and the California Fruit Exchange will bring about a more orderly distribution of fruit shipments.

"Thompson seedless grapes which have been held by the grower almost three months in storage to hit a higher market are now being moved. Considerable loss from mold is being experienced, necessitating repacking. These grapes were, of course, gassed with SO_2 when put into storage, and have been gassed several times since, but even with this treatment our experience is that it is not safe to hold this variety over two months. The storage of Thompson seedless, while certainly not very common, has evidently paid this grower for he stores about 100 carloads every year.

"We are again finding that SO_2 fumigation of grapes reduces the respiration rate of the fruit at storage and car temperatures of 32, 36, 43 and 53 degrees F."

Wm. R. Barger, Indio, Calif.

"Our unusual winter storm started Friday night with rain at Los Angeles, snow at Banning, and wind at Indio," he writes December 14. "Saturday was cold and clear, Sunday with rain at Los Angeles, snow on Foothill Boulevard at Fontana, Rialto, San Bernardino; Monday and Tuesday rain at Indio, with snow in Date Gardens, ten miles west, snow at Banning, Redlands, and San Bernardino. The U. S. Experiment Date Garden at Indio showed a minimum of 28° F. Saturday morning. There is no damage around Indio to onions, carrots, spinach, young peas, citrus fruits and pole beans. String beans not on poles were damaged, and there was a very slight damage to new growth of citrus leaves."

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

C. O. Bratley, New York Market Pathologycomments.

"In a shipment last week of tangerines from Central Florida, 18 per cent of the fruit exhibited large brown collapsed areas in the skin," he writes December 12. "A few of the areas occurred around the stem end. Isolations developed Collecotrichum gloesporioides, the causal organism or Anthracnose. Those financially interested thought that some injury received during the coloring or washing processes had predisposed the fruit to the decay.

"The amount of stem-end decay of oranges has varied considerably from week to week in shipments from Florida. Eleven carloads in a steamer shipment arriving the last week of November contained an average of 17 per cent stem-end rot. One lot showed 50 per cent. Five per cent of the fruit in five cars of grapefruit in the same shipment were affected. Six cars of oranges arriving in a similar shipment the following week contained less than 2 per cent of the decay.

"The opinion among the trade is that the eating quality of the early season Florida oranges on the market now is inferior to that usually obtained this time of year. They consider the sugar content lower, the flavor poorer, and the color of the pulp paler.

"In my reports recently, I mentioned that several lots of fresh olives from California showed sulfur dioxide injury. In each case the olives had been shipped in mixed cars with grapes. However, last week four solid cars of tomatoes contained the injury. They were all from one section of California. In one car 100 per cent of the tomatoes were affected. In all cars the fruit was so badly affected that it was disposed of through the push-cart markets. The injury showed as large depressed greenish bleached areas wither at the stem scar or around breaks in the cuticle."

ADMINISTRATIVE NOTES

The first of the fall and winter staff meetings of the Division was held in the Conference Room of the Department building on Monday, December 19. After introductory remarks by Doctor Auchter, touching upon the general activities of the Division, Dr. F. E. Gardner and his associates told us something of the work of the plant propagation, nursery management and stock storage project.

It remained, however, for Dr. Charles F. Swingle to make the hit of the meeting. It was practically adjournment time when he was called on, and the Chairman asked him if he preferred to give his talk then, or postpone it until the next staff meeting. Doctor Swingle thought it would be better, in view of the hour, to postpone it, a decision which was greeted with loud applause from the audience, some having had visions of a late dinner!

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

C. W. Mann, Pomona, Calif.

"The lowest temperatures ever recorded by the Weather Bureau here have been reported within the past few days from fruit growing districts in the Sacramento Valley," he writes December 15, "with temperatures as low as 23° F. in San Francisco, which rarely experiences any freezing temperatures in winter....

"A method of shipment of California oranges loose or in bulk to eastern markets is expected to be tried out with Washington Navel oranges during the present season. The possibility of securing a considerable saving in the cost of transportation and refrigeration in connection with this method of handling has at various times suggested the plan that is now being advocated. There has been considerable opposition to any plan to sell loose fruit in competition with carefully graded and packed fruit of established brands on which large sums have been spent in advertising. The present interest in the method seems to be due chiefly to the prevailing low prices of even the best grades of fruit in markets in the East and Middle West, and to the increasing production of oranges.

"Dr. Harvey and Mr. Rygg made the last picks of Valencia oranges from their plots at Corona and Pomona late in November. Sample lots are being held in storage at Pomona. This fruit will be used in continuing their studies of the changes occurring in the rind of oranges during the period of growth and after reaching maturity, and as affected by various storage temperatures.

"Experimental lots of grapefruit taken from test shipments forwarded on the LOCHGOIL with export shipments of pears and apples from the Northwest were inspected today. The examination of this fruit at Pomona was timed to correspond with a similar inspection made by Mr. Mallison of the fruit upon arrival at Liverpool, scheduled for yesterday (December 14). The grapefruit held in our storage rooms at the Pomona plant showed the most satisfactory condition at the highest storage temperatures used, 52°, exhibiting none of the typical storage troubles of this fruit.

"A low temperature was reported unofficially from Oroville, where orange trees suffered severely from freezing temperatures on the nights of December 10, 11 and 12. Conditions which produced rain (and some snow) throughout the citrus area of southern California maintained night temperatures slightly above the freezing point of the fruit. About 500 cars of Washington Navel oranges which were to be picked inthe next two or three weeks in the Sacramento and San Joaquin valleys are said to show freezing damage ranging from complete loss to slight or no injury. Certainly the loss was relatively slight in the larger citrus district between Lindsay and Porterville and considerably greater in the region north of Fresno and in the Sacramento Valley."

BULB INVESTIGATIONS

Bulf investigations have suffered grievously the past year. However, work has not seriously suffered thus far at any of the stations, and things have gone on smoothly in the Carolinas and Virginia. At Bellingham, Wash. the situation has been somewhat different.

Last June Mr. Ossewaarde suffered a compound fracture of the left leg above the ankle, and is still in the United States Marine Hospital at Port Townsend. In November, Mr. Peters was taken to the hospital with a complication of troubles, coming on for some time. His main trouble now is undulent fever. Recent reports are encouraging for a recovery in the near future. Mr. Houser has been in bed recently with the "flu" but is now back on the job.

Fortunately for the work at Bellingham we have a second line of defense. A number of reliable young men have worked for us off and on for years during their High School vacations. One of these men was available during our recent need, and was familiar enough with our requirements to step right in and run the institution during the slack season with such directions as Mr. Houser was able to give him from his bed regarding the necessary preparations for the winter season. This preparation for the winter season is no small matter, either, for many items have to be rather carefully tucked away in preparation for their long sleep to which they may not be accustomed in their native land. Although we have a mild climate, we are not without our winter danger. Indeed, as someone has so aptly said, a horticulturist is always in trouble, for he is constantly trying to do something he should not--and very often getting away with it.

ADMINISTRATIVE NOTE

Federal Tax on Gasoline

There is apparently an understanding on the part of some of the purchasing agencies of the Department that the Federal tax imposed on gasoline by the Revenue act of 1932 is on the same footing as the motor-fuel taxes of State origin with respect to the exemption of the Federal departments from payment, says Doctor Stockberger. Notices are reported to have been given by field branches to local gasoline dealers that the Federal tax could not be paid by the Department and that its inclusion would invalidate any bid submitted. It is true that the Government may not be compelled to pay State taxes--on the principle that the sovereign may not be taxed--but the Revenue Act of 1932 does not exempt the departments from the payment of the Federal tax on gasoline. However, when a bidder names a price without mentioning the tax, the acceptance of that price debars him from adding the tax later. In other words, a dealer's price may be 6 cents without the tax and he may bid 7 cents, or 6 cents plus 1 cent Federal tax, or 6 cents plus the Federal tax on gasoline; and any of these bids may be accepted. But if he bids 6 cents merely, without mention of the tax, he can be paid no more.

FRUIT DISEASES

Leslie Pierce, Vincennes, Ind.

"Severe winter weather prevailed throughout the week," he writes December 17. "A minimum temperature of three degrees below zero was recorded for the night of December 15, the lowest temperature recorded here since early in February, 1930. Snow and sleet to a depth of five inches has protected the wheat crop through this period of low temperatures. We have had six snows and one sleet storm to date this winter. On account of unfavorable weather conditions all orchard activities have been discontinued.

"No peach buds have been examined to determine whether or not they suffered from frost injury. Since temperatures as low as eight degrees below zero were reported from some of the orchard locations, it is very likely that some of the weaker buds were killed. In past seasons I have found that a small percentage of Hale and Elberta fruit buds were killed by a temperature of zero.

"A comparatively small number of fruiting bodies of wood-rotting fungi have appeared this winter on peach trees injured by frost in January, 1930. During the mild winter of 1931-32, thousands of sporophores of at least 16 species of wood-rots were noted on peach trees which had been severely injured by frost."

John C. Dunegan, Fayettsville, Ark.

"The temperatures here have risen during the week, and the snow and ice disappeared very rapidly," says his report of December 24. "Heavy rain storms accompanied the rise in temperature and the precipitation has helped make up some of the rainfall deficit which has existed for several months."

Incidentally, he reports an example of effective cooperation with another Federal office. "The Government truck has been loaned to the local Post Office to aid in the handling of Christmas mail," he writes, "following the precedure of previous years. This cooperation on our part has resulted in a considerable saving of money to the Government in past years, and in addition has established very friendly relations with the local Post Office authorities."

Perhaps the local Post Office officials now believe in Santa Clause!

"My time the entire week," he adds, "has been devoted to laboratory studies on plant bacterial pathogens and certain fungi the life history of which I am trying to unravel."

FRUIT DISEASES

Paul W. Miller, Corvallis, Ore.

"Studies on the longevity of Ps. juglandis in natural and sterilized soil were carried on during the week," he writes December 10. "The walnut blight pathogene was isolated from inoculated sterile soil (a water suspension of Ps. juglandis had been added to the soil 22 days before isolations were made). However, attempts made to isolate blight bacteria from natural soil inoculated with a water suspension of Ps. juglandis 22 days before isolation attempts were made were negative. It would appear from the results of these isolations that Ps. juglandis can live in sterilized soil for at least 16 days, but in natural soil it dies out relatively soon after it is added to the soil.

"Studies on the longevity of Ps. juglandis in culture media at room temperature were also carried on during the week. In one case the pathogene was found to be still viable in a potato dextrose agar culture kept at room temperature 652 days after the culture was made. However, attempts to isolate living blight bacteria from potato dextrose agar cultures 733 days old were negative. It would appear from these results that Ps. juglandis is a relatively long lived organism on culture media.

"On Tuesday and Wednesday I attended the Eighteenth Annual Meeting of the Western Nut Growers' Association and delivered a paper on studies of walnut blight and its control in Oregon. Approximately 250 growers were present at this meeting. Contacts were made with a number of influential growers and several cooperators were lined up for experimental work during the coming year."

Writing on December 3, he said: "In studies carried on Ps. juglandis was isolated from lesions on fallen leaves lying on the ground in a few of the attempts made. It would appear from these results that Ps. juglandis was still alive insome of the lesions on fallen leaves. The walnut blight pathogene was also isolated from sterile soil in which a water suspension of Ps. juglandis had been added 16 days before isolation attempts were made. However, attempts to isolate blight bacteria from natural soil inoculated with a water suspension of Ps. juglandis 16 days before isolation attempts were made were negative.

"It would seem from the results of these isolations that Ps. juglandis can live in sterilized soil for at least 16 days....Attempts to isolate the pathogene from nut mummies picked up from the ground underneath a walnut tree were likewise negative."

Death of W. W. Tracy

Just as the NEWS LETTER is being mimeographed, we have a telegram from Mr. R.L. Piemeisel of the Bureau of Entomology, Twin Falls, Idaho, notifying us of the death after a short illness of influenza, of Mr. W. W. Tracy, on December 22. Mr. Tracy was in charge of the Curly Top Investigational work, with headquarters at Twin Falls, where he has been since 1929.

FRUIT DISEASES

H. F. Bergman, Amherst, Mass.

Writing on December 19, he says: "Most of the time this week has been spent on the analysis of cranberry vines for copper content. We have been trying some methods of wet cumbustion and have found one that so far appears quite satisfactory and is considerably more rapid than the usual ashing in the muffle....Some time also has been spent in tabulating data from various experiments and field observations of last summer.

"Unusually cold weather has prevailed during the latter part of the week. The temperature was as low as -20° F. in some places around Amherst, and as low as -35° F. in some other parts of the State. Temperatures in the cranberry district on the Cape were not much below zero."

Howard E. Parson, Spring Hill, Ala.

"Pecan trees have definitely gone into a winter condition," he reports December 10, "most of the leaves having fallen from frost, and all of them dead. This is more nearly normal than last year, when the first killing frost occurred March 6.

"The cover crop planted early in the fall is not showing up any better, if as well, as when it was first up, which may be due to the cold weather we have had.

"Oranges are practically all harvested, and pecan exchanges in Mobile are closing for the season from lack of business."

Lee M. Hutchins, Fort Valley, Ga.

"The past week was interrupted by a trip to Memphis to attend a phony peach quarantine hearing," he writes on December 17.

"Austrian peas in our experimental orchards and on ground prepared for future nurseries are coming up beautifully."

"We have continued our testing of peach nursery trees propagated by the pice-root grafting method," he reported December 10. "It is now known that certain root pieces came from trees that were in the incubation stage of the phony disease when root-pruned. We are finding about 8 per cent of the nursery trees give a positive or a suspicious laboratory identification test. These latter trees are being segregated, and in due time we shall have information on the value of the test for selecting our infected nursery stock....we have been applying oil spray to our experimental nurseries and orchards...."

FRUIT DISEASES

J. R. Cole, Shreveport, La.

"On Tuesday, I harvested the Delmas nuts in my scab experimental plot at Winona, Tex.," he writes December 10. "The nuts are of very poor quality due to an early freeze in November, before they were mature. In spite of two applications of 1-1000 nicotine spray, in August and September, the one in combination with 2-5-50 Bordeaux mixture and the other using soap as a spreader, considerable injury was caused by the black aphis. However, one Schley tree which was defoliated early in September in this Delmas block matured its nuts. The Schley tree was not sprayed. A few Frotscher and Stuart trees scattered throughout the Delmas block failed to mature their nuts and very little injury was done them by the black aphis. They were also caught by the freeze. The nuts that did not fall from the check trees in the early fall from scab were damaged to such an extent that they would have been unmarketable regardless of the freeze.

"The members of the U.S.Pecan Disease Field Laboratory here and Mr. Butterfield, manager of the Combination Orchard Company of Winona, Tex., mentioned above, have concluded that there were four reasons why the nuts in this plot were of poor quality: First, the trees set too many nuts; second, black aphis injured the trees; third, frequent cultivation and irrigation kept the trees and nuts in a sappy condition; and, fourth, about 50 per cent of the nuts froze before maturity. There was no spray injury where three applications of 2-3-50 Bordeaux mixture were made, but some injury resulted from the 3-4-50 Bordeaux mixture, three applications being made."

H. A. Smith, Ozark Fruit Disease Laboratory.

"The annual meeting of the Missouri State Horticultural Society was held at the Savoy Hotel, Kansas City, Mo. on December 13," he reports under date of December 17. "The morning session was devoted to committee reports. In the afternoon talks were made on different phases of horticulture by members of the staff of the Department of Horticulture of the University of Missouri.

"We are still having rather severe winter weather. Temperatures have not gone below zero as yet, but there has been snow cover for nearly two weeks, which is an unusually long period for this section of the State."

December 10 he wrote: "The last of November a field trip was made to orchards in the vicinity of Marionville, Mo. In many of the orchards we noticed that pruning operations were in full swing....Six inches of snow fell on Saturday. Temperatures have ranged from 10 to 32 for several days..."

ADMINISTRATIVE NOTES

In the December 1 issue of the NEWS LETTER we used an item concerning leases, etc., which read as follows:

> "In view of recent instructions issued by the Department, and the complicated factors which must now be taken into consideration before we can lease private property, no commitments for rental of land or buildings of any nature should be made until the matter is first taken up with the Business Office and specific directions obtained as to the methods of procedure."

Mr. Swartz points out that this applies not only to formal leases, but also to cooperative agreements and short term rental agreements covering land, as well as all commercially-rented space such as office, laboratory, garage and storage space, whether they involve no rental or rental at any rate. No commitment should be made by the field representative as to the proposed lease or rental agreement until the matter has first been referred to us here for approval and instructions by our Business Office as to the proper method of procedure. Only in this way can you be sure of avoiding errors and delays and the possible suspension of payment of vouchers for rental in the event that the lease or agreement cannot be put through for some reason or other.

It is also important that at least two months advance notice be given the Business Office of your desire to negotiate a lease or rental agreement, in order that we may be certain of having the lease or agreement put through in proper form and effective on the date indicated. This may perhaps appear to be stretching things a little, but it is a real instance where more haste is apt to result in less speed--and if anything does go wrong by reason of your haste, it may react to your financial--er--injury.

Calendars for Field Stations. Owing to the fact that the supply of Department calendars for 1933 has been severely reduced in order to keep within the limitation placed on the use of blank paper during the present fiscal year, we shall not be able to get enough calendars to permit us to supply our field stations.

We can, of course, supply through our Business Office the usual calendar pads and stands.

Of course, your natural solution of this calendar problem will be to coax one from some of your commercial friends--and our Administrative Regulations forbids the display of advertising matter in office and laboratories. So, if you use such a wall calendar, etc., please see that the advertising is removed or camouflaged.

Vol. 5, No. 1. January 2, 1933

The OFFICE OF
HORTICULTURAL CROPS AND DISEASES
SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF HORTICULTURAL CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R

The official organ of the Division of Horticultural Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.

John A. Ferrall, Editor

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Vol. V Washington, D.C., January 16, 1933 No.2

Importance of Research Work

It is extremely gratifying to note that the widely read Scientific Monthly begins in its January issue a discussion of the scientific work of the Government, the series opening with an article by Secretary Hyde on research in the Department, and a second article, by Doctor Woods, telling of the development of agricultural research and education under the Federal Government.

Stuart Chase in Scribner's Magazine for December discusses "Government Economy," and points out that a real danger exists in the possibility that those bent on balancing the budget will find that for one reason or another it is not so easy to make cuts in veteran payments, etc., and so may turn to education and research. In fact, as we know, research has already felt a trend in this direction. Under the circumstances, articles such as those by the Secretary and Doctor Woods are of the utmost importance. At the same time, they emphasize the need for carefully prepared reports from our workers in all fields--reports which show of what the work has consisted, where it has been performed, and what has been accomplished. It is very essential that we be able to show at any time just what the public has received or will receive in return for the money we spend.

As Dr. W. F. Willoughby, Director of the Institute for Government Research, says, very often where Governments spend more they are doing more--and the increased expenditure is more than offset by the additional service rendered. In the matter of securing adequate financial support, however, we must be able, in our own work, to demonstrate that we are paying dividends on the investment.

There is a story of an investigator who was studying the oranges of Palestine and vicinity. He was amazed to find newsboys in that region speaking several languages more or less fluently. The climax was reached, however, when he found in one of the stores a parrot speaking four languages. He bought the bird and brought it back to the United States. Unfortunately, he sent it on ahead of him. Arriving home a day or so later and after a fine dinner, he said to the old colored cook: "Mandy, what did you do with the parrot?" She looked puzzled. "I mean that fancy colored bird I sent you," he explained. "Oh, that," she said. "Why I cooked him--you jes' had him for dinner." He was crushed. "Cooked him!" he exclaimed. "Why, that was a valuable parrot--he could speak four different languages." The cook looked dubious. "Well," she said finally, "if dat bird know'd so doggone much, why didn't he say something?"

Modesty is to be encouraged--up to certain limits. But if failure to speak out threatens us with a fate somewhat similar to that met by the parrot, then it is up to us to do a little horn blowing at least. And it is not difficult to find splended dividend-producing achievements in the Division. I can do it myself now and then--and sometimes I am rather startled at their nature. Take tulips, for example. I had no idea that for the past five years the tulip has returned to growers more than twice the total cost of all the work of our Division.

During the last year before the depression this country consumed two hundred million tulip bulbs. What does the crop mean in dollars and cents? If the growers get ten or twelve dollars per thousand the crop value in the producers' hands will be between two and two and one-half million dollars, and the cost to the consumer about twice that figure. Instead of the usual 500 per cent dividend, this tulip work of ours has gone far beyond that figure--and is still traveling.

In the past five consecutive years we have harvested at the Bellingham Bulb Station out in Washington at the rate of 70,000 merchantable bulbs to the acre, and more than maintained stock. And we have made decided improvements in cultural methods. Take digging, for example: The soil conditions are not suitable at Bellingham for the use of the large power machines which sieve out the bulbs automatically. The acreage of single varieties, too, are not extensive enough to justify or permit the use of heavy, complicated machines. So the methods we have worked out are on a basis adapted to the small grower. The time was when we employed the bed method of culture and it took five men two weeks to dig an acre of tulips. With the furrow-row method four men and a team can do it in five days. The result, in merchantable bulbs, is about the same.

Fewer bulbs are planted and a smaller number actually dug when the row method is employed, but it has been our experience that a better development occurs and consequently a relatively larger number reach mature size, giving approximately the same yield per acre in the row method of handling. Both at Bellingham and in the Carolinas, the bulbs are covered in planting and uncovered in digging with a plow.

FRUIT AND NUT PRODUCTION

Geo. F. Waldo, Corvallis, Ore.

"During the first part of the week an examination of canned strawberries was made covering strawberry seedling selections developed at the Oregon station," he writes December 24. "The examination covered 70 selections. Out of this number the greater portion were not considered as being highly desirable from the canning standpoint. However, about 10 were quite desirable although none of them were superior to the best Ettersburg 121.

"Examinations were also made of small fruits for winter injury both at Corvallis and in Multhomah and Clackamas counties. Considerable injury was found on Loganberries, particularly the killing of the cambium near the bases of the canes. Also considerable bud injury was noted.

"In the Gresham district the Cuthbert red raspberry showed practically no injury to the canes but considerable killing in buds which have made some late fall growth. Very little killing was observed where the buds were still dormant.

"As there was considerable late fall growth dur to mild weather in this section, it is believed that from the present outlook the crop has been cut 50 per cent. Killing of the flower buds in the Marshall strawberry was also observed to be quite general in this section. Apparently the crop of strawberries is also cut to a considerable extent. The Lloyd George red raspberry showed no injury whatever."

C. F. Kinman, Sacramento, Calif.

"Root growth of all trees was apparently stopped by the severe cold that started December 10 and lasted for a week," he reports under date of December 24.

"The minimum temperature on two days was 11° above zero. During this week the soil temperature at one and two feet below the surface went down about 15 degrees. The warm fall weather had kept the trees active late and roots of practically all of them were growing, although in the case of the peach the leaves had been shed for some time...."

B. G. Sitton and J. L. Pelham report from the U. S. Pecan Field Station at Shreveport, La., that they have prepared material for the exhibit scheduled for January 26 at Lafayette, La. "Material to be exhibited," they write,"consists of collection of varieties and exhibit showing influence of foliage on the filling of nuts. It is also hoped we will be able to secure specimens of different methods of propagation."

FRUIT AND NUT PRODUCTION

Elmer Snyder, Fresno, Calif.

The blocks of vines which were listed for removal this season were pulled during the past two weeks," he reports on December 24. "These vines were pulled by a contractor using a 30 hp tractor and a specially designed 'U' shaped vine digger. Approximately one acre of vines can be pulled per hour, varying with the type and condition of the soil. The cost this season varies from $2.50 to $3.50 per acre, depending upon the size of the plot to be pulled in one location, and the type of soil. Considerable general activity has been noted in the pulling of vines this season. In Fresno county there are five or six contractors who have been working for a period of six weeks or more and the pulling will continue for some weeks yet. The varieties which are being removed are mostly Muscat of Alexandria and Malaga. The writer has not seen any first-class vines removed and in most cases acregae is being pulled which could have been pulled 10 years ago, due to the generally poor condition of the vines."

He had previously written that over 500 seedlings were growing in the greenhouse, with additional numbers coming up each day. A periodic plant of seed was being made, with additional planting of seed made to test out sterilized soil and other factors on the germination of grape seed.

C. P. Harley, Wenatchee, Wash.

"An interesting problem which the State Horticultural Office expects to face in the spring is the method whereby they can prevent any set of fruit in some of the orchards," he writes December 13. "Apparently many of the marginal orchards will be without care next season, and it will mean considerable expense for the State and county officials to spray these trees throughout the season. If they are not sprayed they will, of course, become infested with codling moth.

"Mr. Harter, the Inspector at Large in Wenatchee, plans to adopt a spraying program in full bloom in the hopes of preventing any set of fruit. It will no doubt be rather a difficult proposition to destroy the blossoms without causing injury to the tree also.

Incidentally, and editorially speaking, the Wenatchee Horticultural Club held its first meeting the middle of December and in connection with other matters proceeded to elect officers. That's the point, for the new President of the Club is E. L. Reeves, our own "Bud" Reeves. Mr. Masure was elected to serve on the program committee for the ensuing year.

NEW STRAWBERRIES AND A RASPBERRY *

I think no one is going to complain if a raspberry is handed to him--along with a couple of excellent strawberries. Anyway, our colleagues, George M. Darrow and George F. Waldo are willing to take a chance, and the Press Service is spreading the glad tidings to the public at large.

"A delicious new garden and general market strawberry, another equally good but sweeter and firmer, and a new purple raspberry superior for canning and preserving have been announced by the U. S. Department of Agriculture," it informs the newspapers. "The Department, in cooperation with the Oregon State Agricultural College, also announces a new strawberry for the Pacific Northwest.

"The Department has tested the new varieties for nearly ten years. They are vigorous growing, productive, and resistant to the common diseases. The new varieties are additions to the list of outstanding small fruits the department has introduced in recent years. The new garden and general market strawberry is the Dorsett; the sweet firm fruit is the Fairfaz; the raspberry is the Potomac purple; and the strawberry introduced jointly with the Oregon State Agricultural College is the Narcissa."

The Editor is very much gratified to announce that the Dorsett is named for P. H. Dorsett, recently retired plant explorer of the department, who introduced thousands of new plants, including some Oriental strawberries--and who made millions of friends and is still making and will, we trust, continue making them for another fifty years at least. He certainly looks capable of carrying on for that period--and we use the expression "carrying on" in its better sense! P. H. was and is undoubtedly one of the best loved men ever connected with the Department.

The strawberry named for him is essentially a berry for home gardens and the general markets, they tell me. It is vigorous, productive, and very high in dessert quality, but it is a more tender berry than the Fairfax, and probably will not stand long distance shipment as well as the Fairfax unless carefully handled. It comes from a cross of the Royal Sovereign and Howard No. 17 (Premier) but is firmer and better in quality than Howard 17. It is bright red, large, and juicy. It has made an especially good showing in southern New Jersey, Maryland and Delaware.

"The Potomac purple raspberry is hardier, more resistant to common diseases, more productive, more vigorous, and better suited to canning and preserving than other purple raspberry varieties. It appears adapted to a wide range of climate and the department men declare it should be tested in any area where black, red or purple raspberries

*Darrow, George M., and Waldo, George F. The Dorsett, Fairfax and Narcissa Strawberries. U. S. Dept. of Agr. Circ. 257, January, 1933.

NEW STRAWBERRIES--AND A RASPBERRY (Continued)

are grown commercially. It has been tested in Maryland, New Jersey, Michigan, Ohio, and Oregon and is one of the most firm-fruited varieties grown. It has succeeded in Oregon as well as in Maryland, and is remarkably free from serious diseases both in the East and Northwest."

It seems probable that this new raspberry has been named for the noble Potomac river which is part and parcel of the Nation's Capital, and if so, it should be explained that the word "purple" applies to the raspberry and not to the river. Here in Washington we neither look upon the wine when it is red, nor the river when it is purple.

"The Narcissa strawberry is named for Narcissa Whitman, wife of Marcus Whitman, famed missionary and explorer of the Northwest. It is a berry for that region comparable to the Dorsett in the East. In the Northwest it is especially resistant to rots, but the leather rot fungus attacked it severely when it was grown at Glenn Dale, Md. It has exceptional dessert quality. The Narcissa is being introduced cooperatively by the department and the Oregon State Agricultural College."

To Dr. George M. Darrow and George F. Waldo, chiefly responsible for these new varieties, their outstanding characterictic is considered to be the taste--technically known as dessert quality--and like other things, we try to have our small fruits always in "good taste."

The department has none of these to distribute, but they can be obtained from nurserymen. The new fruits were developed from crosses made at our field station near Glenn Dale, Md. The two eastern strawberries are believed to be best suited to the latitudes of Maryland and New Jersey.

FRUIT DISEASES

Paul W. Miller, Corvallis, Ore.

"The weather during the week ending December 17, has been characterized by abnormally low temperatures," he writes on December 17. "For six continuous days the temperature never rose above the freezing point. On several days during the week the temperature was below 10° F.

"It is too early to determine definitely if these abnormally low temperatures have resulted in any appreciable damage to fruit trees. It seems reasonable to expect considerable damage to certain of our less hardy fruits. Small fruits, notably Loganberries and raspberries, are believed to be appreciably damaged."

APPLES

Sometime back one of our radio speakers, in referring to the importance of the apple, burst into rhyme, quoting Bob Adams' "The Apple Cure:" "To regulate the human gizzard, And all man's frame from A to izzard, The good red apple is a wizard. To eat each day a juicy pome, Will keep the doctor from your home. So shed your night shirt, rise betimes, And pick yourself a Golden Grimes. No more, I ween, will old Doc Green, Come ramping up in his machine, All set to amputate my spleen. No more he'll jab, with hand expert, To find the spots he knows will hurt. No longer overwork his brain, And all its fine ball-bearings strain, Determining a diagnosis, Before he tells me what the dose is. Instead of pills of varied size, I'm eating Winesaps, Yorks and Spies. And you, I hope, will follow suit, and fill yourself with wholesome fruit."

Well, when bigger and better apples are produced, we'll produce 'em--and more than that, we are right now showing growers how to grow more and better apples on smaller acreage. Under the circumstances, we are glad to see anything that appears likely to boost the consumption (and sale) of this splendid horticultural product. Apples must be rather popular, even as it is, for late statistics show that there are about half a billion trees growing in the world, with an estimated annual production of 550,000,000 bushels of apples.

The United States is said to produce about 35 per cent of this total, but both Australia and New Zealand top us in the matter of per capita consumption of apples--39.7 and 36.5 as against our 30.9 pounds. This refers to the consumption of dessert and cooking apples. From the standpoint of apple consumption for all purposes, France leads with 60 pounds per capita, followed by Germany with 52.7. The United States ranks third--51.6. Apples entering into foreign trade amount to about 35,000,000 to 40,000,000 bushels a year, and this country contributes some 15,000,000 bushels to that total. We have been doing all right in the exporting field, but have lagged somewhat in the matter of home consumption-- a situation which is being corrected at present by conditions over which we have but little control apparently!

Speaking of home consumption, it is interesting to note that our food specialists have pointed out that apples can be used to replace vegetables when there happens to be a scarcity of vegetables for one reason or another. "Hot baked apples, slightly sweetened, go well with almost any kind of meat," says these specialists. (Are they telling us!) "Scalloped apples served hot in a baking dish are also delicious... slices or halves of apples simmered in thin sirup until tender and clear are also attractive in the main course of a meal. Slices of apples and cooked sweet potatoes are excellent baked together with a little butter and sugar or sirup for seasoning--"

Well, all I'm trying to do is increase our per capita consumption!

FRUIT AND NUT PRODUCTION

C. E. Schuster, Corvallis, Ore.

"As a result of the freeze we are finding some damage among the walnuts," he writes December 17. "It seems to be typical of mature walnut trees to burst wide open under certain conditions during sudden cold snaps.

"In going through a couple of orchards last Friday, the trunks were found split from six to ten feet--that is from the ground to the lower limbs and in some cases the crack was so wide that a knife handle could be pushed into it. This occurred in cases where the trunk was English walnut and the root of the black walnut. In practically all of the cases noted, this was simply a re-opening of cracks that had been split either three or seven years ago...."

PRODUCE SHIPMENTS REDUCED

The Press Service has issued a release indicating that produce shipments for the past year were the smallest in 11 years--these estimates including rail and boat shipments of fresh fruits and vegetables.

"Market supplies thus moved," says the release, "will amount to 170,000 cars fewer than shipments in 1931....shipments up to December 1 totalled 735,086 cars...."

The situation is not quite as bad as these figures might indicate, it is pointed out, since an increasing number of farmers are now on a live-at-home basis, and farm housewives are presumed to have canned an unprecedented volume of fruits and vegetables against the winter season, thanks to the encouragement being given by the work of Doctor Caldwell and his associates, of course.

"The reduction in shipments suggests that city people have had less fresh fruits and vegetables this year than in ten years past, although some of the reduction in rail and boat shipments is due to heavier motor truck hauling of supplies to market....The number of itinerant truckmen seems constantly to increase as does the number of roadside stands. Many consumers depend on these sources."

Shipments of potatoes will total something under 200,000 cars, according to estimates, as compared to some 240,000 for 1931 and 252,000 for 1930. This may result in a considerable increase in slender figures. (Fashion note.) As might have been expected, the statistics show that we were handed practically as many lemons as usual, shipments totalling 15,600 cars as against 18,229 for last year.

THE ATLANTIC CITY MEETINGS

The Division was amazingly well represented at the Atlantic City meetings of the American Association for the Advancement of Science and Affiliated Societies, December 27-31, considering the bars that have been necessary against official reimbursement for such attendance. It certainly reflects a keen interest in the work.

The NEWS LETTER did have a sort of notion of listing the papers contributed to the general program, but after glancing at the program of the American Society for Horticultural Science and observing that of the 162 papers, 40 were by members of our Division or by workers in Experiment Stations who are cooperating with us, we considered that here was a situation where discretion was the better part of valor. Considering the paper shortage, etc., we have not checked up the papers in the pathology, plant physiology, botany and Potato Association programs as yet.

It wasn't entirely a case of contributing, for we brought away something, too. Doctor Magness was elected Vice-President of the American Society for Horticultural Science; Doctor Auchter is the Society's representative on the National Research Council, and Doctor Magruder will serve on the Editorial Committee. Incidentally, the program of this Society at the Atlantic City meeting reflects a lot of credit on the Program Committee-- of which Dr. F. P. Cullinan was Chairman.

Speaking of efficiency, a good bit of the credit for the large attendance by members of the Division's staff must be given to Doctor Stuart, who made arrangements for a bus trip from Washington to Atlantic City--arrangements before and during the trip that probably made the occasion one he will long remember--but try to forget. Among those making the trip were Messrs. Auchter, Caldwell, Darrow, Magness, Cullinan, Clark, Gardner, Boswell, Stevenson, Stuart, Fisher, Wright, Haller, Harding, Degman, Ed Smith, Thompson, Lombard, Lumsden, Porte, Steinbauer, Regeimbal, J. H. Beattie, Reed, Lutz, and Miller. The fair sex was represented by Misses Bryan, Quirk, Cash, McCulloch, Brown, Beckwith and Fawcett.

At the time of going to "press" the NEWS LETTER has been unable to complete the list of those going by train, or automobiles of the non-bus type. But at all events, it is evident that we were quite well represented. The only distressing angle to the situation is the fact that the bus company went into bankruptcy or otherwise--"faded" so that another bus had to be chartered for the return trip-- a 29-passenger car, seating 34 people-- It is rumored that the trip down developed a number of excellent tenors and baritones, but it is probably safe to say that their efforts had no real bearing on the refusal of the bus line to handle the return trip!

ADMINISTRATIVE NOTES

Place Value on Shipments, etc. The NEWS LETTER of July 1, 1932, page 203, called attention to an extract from the Chief Coordinator's Bulletin No. 107, in regard to declaring the value of shipments made on Government bills of lading. Our attention is again called to this matter in P. B. A. Circular No. 218, which also states that the Railroad Express Agency has sent a circular to all of its agents notifying them that they must require strict compliance with the instructions in regard to declaration of value on shipments.

Inasmuch as there is apparent disregard of these regulations by some Government employees, we wish to emphasize again that all shipments made by employees of this Division must definitely show the value of the material being sent.

The Express Company limits damage to $50.00 on shipment up to 100 pounds, and beyond that weight allows a liability of 50 cents a pound, actual weight--except where value is declared to be in excess of that allowed by the Company. If the value of the shipment exceeds the allowable liability, by all means the employee should enter the actual value of the shipment on the package or packages as well as on the bill of lading. This entry should be made by the Government employee, incidentally, and not by the agent. When the shipment consists of more than one package, the value should be marked on each, as follows: "Value $_____, on_____packages, "indicating the number of packages included in the valuation; that is the number in the particular shipment.

In cases where the value is less than $50.00, and the shipment is heavy enough to warrant such value, a statement may be made on the shipment, as follows: "Value not exceeding $50.00."

In cases where a small package is being sent which has a high value, by all means indicate the exact value on the shipment and on the bill of lading.

Several shipments have recently come to the Division here at Washington either with no indication on the package or bill of lading to show the value of the package, or with the value entered on the shipment by the express agent instead of the Government employee. Please exercise care to see that the value of any shipment you may make is indicated on the package and on the bill of lading.

And, of course, in the matter of values of shipments, it is well to consider carefully the method to be used--mail, parcel post, express or freight--and whether by water or rail. In fact, we are now required to furnish a convincing statement to support express shipments over the 100-pound limit, showing why freight (by rail or water) could not be used.

ADMINISTRATIVE NOTES

Outside publication, radio talks, etc. Our workers are, of course, permitted to prepare articles for outside publication, to deliver talks over the radio, etc. However, where the material to be used treats in any way of the work or policies of the Bureau or Department it must be submitted, through Doctor Auchter, to the Chief of Bureau for prior approval.

Such approval must be secured before the article is actually offered for publication in final form, but there is no objection to a preliminary discussion of the paper with the publishers. In fact, we prefer, in asking for approval of outside publication, to be able to state definitely the publication in which the material is to be used, and whether pay is to be received or not.

We need the original of such articles for submission to Doctor Taylor who secures approval (or otherwise) of publication through the regular official channels. We need two carbon copies--one for our files in Washington and the other for the files of the Department's Office of Information.

Radio talks fall into the same category as matter to be printed, as care must be taken not to use anything treating of our work unless definitely approved in advance, just as a manuscript intended for publication. And employees must see that the Department is not used for advertising purposes, and that their names are not used in the advertising matter (printed, radio, etc.) of organizations commercializing any of the work conducted by the Department, irrespective of any merits which the enterprise may possess. In radio talks in particular, care is necessary to make sure that the Department will not be embarassed in any way.

Staff Meeting The January 9th staff meeting moved over to the South Building, and Mr. Edwin Smith told us something of the interesting details of the application of our storage and transportation investigations in the Northwest to the horticultural industry.

Peddling and Soliciting. The tremendous increase in the number of persons visiting department buildings in recent months for the purpose of canvassing, soliciting, etc. has led the Chief of the Department's Division of Operation to urge employees to post notices calling attention to the fact that our regulations definitely prohibit such operations, which often seriously interrupt official work. Mr. Swartz can furnish standard warning cards covering the case.

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The OFFICE OF
HORTICULTURAL CROPS AND DISEASES
SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF HORTICULTURAL CROPS AND DISEASES

S E M I -- M O N T H L Y N E W S L E T T E R

The official organ of the Division of Horticultural Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.

John A. Ferrall, Editor

This NEWS LETTER is for distribution only to employees of the Division, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Horticultural Crops and Diseases. The reports of field workers, of course, represent their personal opinions and are not necessarily the official and final word on the subjects which are discussed.

Vol. V Washington, D. C., February 1, 1933 No. 3

Let us Spray!

While the last issue of the News Letter was lecturing you on the desirability of reporting on achievements, the Official Record was "scooping" us on the work of Dr. W. P. Raleigh, who announced at the Atlantic City meetings a new spray he has worked out for controlling late blight of potatoes. Considering the millions of dollars late blight has taken from the potato growers of this country, the new spray appears ready to take its place among the foremost of the achievements of the Division.

"A new homemade copper spray for potatoes which promises to be especially useful to growers of certified seed, because it controls late blight and still does not cover the leaves of the plant so heavily as to make the detection of mosaic difficult, is announced by Dr. W. P. Raleigh, a pathologist of the Bureau of Plant Industry," says the Official Record notice. "This spray is slightly more costly than the common Bordeaux mixture, but several farmers could cheapen the cost to them individually by joining together in making up the concentrate in quantity. The following is suggested by Doctor Raleigh for making a quantity:

"Dissolve 1 pound of copper sulphate in 2 quarts of water and add to this 1 pint of blackstrap molasses. Stir this mixture well and make it slightly alkaline by adding about four-tenths pound of lye which has been dissolved in 1 quart of water. The resulting material is allowed to stand until it has turned yellow, which usually requires about a day at room temperature. The spray is made up at the rate of about 4 pounds of copper sulphate to 50 gallons of water."

The spray has been tested only in Maine, however, where it seems to be practicable only on potatoes that are grown for seed. Until we have proof of its wider applicability, Doctor Raleigh doesn't want us to claim too much for it!

FRUIT DISEASES

John C. Dunegan, Fayetteville, Ark.

Writing on January 7, he says: "The Weather Bureau station at Bentonville reported a total precipitation of 7.65 inches for the month of December. The normal precipitation for December is 2.37 inches, and during December 22 and 23, precipitation to the amount of 6.53 inches was recorded. This is the largest amount of rainfall recorded during December in the history of the Bentonville office. The total precipitation for the year 1932 at Bentonville was 40.91 inches, which is 3.33 inches below the normal.

"The Arkansas strawberry acreage for harvest in 1933 has increased from 16,500 to 20,000 acres, an increase of 21 per cent over 1932, according to the 1933 outlook report prepared by the Extension Service of the University of Arkansas College of Agriculture. The price outlook for 1933 should normal yields prevail, is not favorable. With average yields the larger acreage will materially increase production over 1932, when yields were below average because of frost damage. The demand will probably be about the same as in 1932, or slightly lower."

Leslie Pierce, Vincennes, Ind.

The "measles" disease of apple trees is becoming more prevalent and is increasing in severity in a number of orchards in the Vincennes section, he wrote December 31. "Red Delicious is particularly susceptible to the disease. The trouble begins to show on the young trees the second or third year after they are planted in the orchard. Trees contracting the disease at an early age are practically worthless by the time they reach the age of eight or ten years. Limbs from badly affected eight-year-old Delicious trees brought to our office from an orchard in the Oaktown section show an average of only about three inches of terminal growth made last season. Many of the lateral twigs on the limbs showing the most severe infection have been killed by the disease. A heavy application of stable manure was recommended as a control measure."

On December 24, he reported: "A total of 245 Elberta fruit buds from the Dyer orchard, collected and examined December 22, showed that 5.3 per cent were killed by the low temperature the night of December 15. Elberta fruit buds from the Purdue Vincennes orchard were collected and examined December 23. Of a total of 329 buds, 4.5 per cent had been killed by the freeze. A minimum temperature of 5 degrees below zero was recorded at the Purdue-Vincennes farm the night of December 15. In making the examination to determine the amount of damage from frost injury, it was noted that the peach fruit buds are as far advanced as they were at this time last year in spite of the fact that we have had much colder weather than we had in November and December, 1931."

FRUIT DISEASES

H. F. Bergman, Amherst, Mass.

"Mr. Truran and I went down to East Wareham this week to examine cranberries in storage tests from spray plots," he says in a report dated January 7, reaching us just after the January 16 NEWS LETTER had gone to "press." "Differences in the amount of rot as between sprayed and unsprayed plots were in general well marked. The difference was most noticeable on some Middleboros which have always been extremely poor keepers."

Paul W. Miller, Corvallis, Ore.

"It is now evident that the freeze which occurred during the week of December 17 has resulted in considerable damage, particularly to small fruits," he writes on December 31. "In most localities and under most conditions nut trees seem to have escaped serious injury. In a few cases, walnut trees have been found split on the southwest side of the trunk from the ground line to the crotch. However, this type of injury is not expected to be of any serious consequence, since in the walnut the bark does not normally roll away from the cambium when it is split."

PEAS AND PROFITS

Our Daily Digest quoted recently a Spokane, Wash., dispatch about possibilities of the pea as a life-saver in parts of the Northwest. "The humble pea--canned to be served as green peas, split for soup and packaged for seed--has proved a life-saver this year for many wheat farmers in the Palouse district of Eastern Washington and Northern Idaho," says this dispatch.

"They have delivered to warehouses in the pea-growing districts approximately 80,000,000 pounds of peas," it goes on to say. "That represents the crop from 80,000 to 90,000 acres, and returns to these growers nearly $2,000,000.00."

I wonder if there isn't some way to prove that one of our investigators started this thing?

"It is not a large item in itself (oh, isn't it—just $2,000,000!) in the agricultural program, but the pea crop is 'velvet' in the inland empire of the Pacific Northwest. It is grown on wheat land that, under the old dryfarming methods would be summer fallow--that is, growing no wheat this year but being cultivated constantly in preparation for the planting of fall wheat for 1933 harvesting. By growing peas on this land the wheat farmer saves cultivation costs and gets a guaranteed price for his product...." Oh, they eat their peas with honey, they have done so all their life; it does look kinda funny, but it holds 'em on the knife!

BULB INVESTIGATIONS

"The flowers that bloom in the spring, tra-la, have nothing to do with the case, tra-la," but iris blossoms for Christmas or even Thanksgiving have a lot to do with it. Hence the importance of the announcement by David Griffiths and R. C. Wright of bulbs in full blossom the day before Thanksgiving.

The Iris Wedgewood variety on the North-Pacific slope will blossom the last half of January, with ordinary handling; and bulbs grown in the Virginia-Carolina region about two weeks earlier. It has to be forced for use after the new year. Iris blossoms for Christmas have been difficult to get even from southern-grown bulbs, so in the last few years the effect of storage temperatures on the acceleration of their blossoming has been looked into with gratifying results.

Last year these investigators reported some simple tests conducted with Bellingham-grown bulbs of Iris Wedgewood. Bulbs, dug the first week of July, were put in a temperature of 80° F. during the remainder of the month and then shipped to Rosslyn, Va. in time to go into cold storage at 50°F. the middle of August. They remained in this temperature up to potting on September 22. The flats were placed directly on the benches of the greenhouse with practically no heat until the early batches blossomed. The bulbs which received this treatment were cut in full blossom the day before Thanksgiving, while the checks from ordinary storage handled in an identical manner did not flower until January 15.

In 1932 the Wedgewoods were handled differently with an idea of showing whether it was the cold or heat treatment that produced results. The bulbs at Bellingham were kept in ordinary storage up to August 10, and then put in 50°F. up to potting on September 16. Flowering of the treated bulbs began December 16. The checks opened about the same time as in the previous year, all having been kept in a night temperature of 50 to 55°F. since the autumn weather became cold enough to produce such temperatures in the greenhouse.

The conclusions reached on the basis of these two experiments is that heat applied early and cold applied late in the storage season both have their accelerating influence when applied in succession as detailed here; also that a temperature of 50°F. alone applied for 30 days before potting in early September produces sufficient acceleration in Bellingham-grown bulbs to get them into blossom in ample time for Christmas. Of course, southern-grown bulbs can be flowered still earlier. The markets this season for the first time are getting acquainted with these early Wedgewood blossoms. The commercial growers in the Carolinas began cutting on election day. They use ordinary storage after digging and submit the bulbs to 50°F. for four to six weeks just before planting. Ordinary storage temperatures with them are not far from 80°F.

From which it appears that it is now practicable to enjoy bulbous iris blossoms from early November to late June.

FRUIT AND NUT PRODUCTION

C. F. Kinman, Sacramento, Calif.

"Although the apricot orchard that we are working in fruited very heavily last year and the year before, the appearance of the buds forecasts a good crop for next summer," he reports January 10. "The effect of low temperatures during early December is becoming more and more apparent," he adds. "In driving through the citrus growing sections in this part of the State and farther north, one is impressed with the injury to citrus trees. There is orchard after orchard of brown leaves and hardly a green leaf to be found, and the branches appear to be badly injured. There certainly will be little if any citrus fruit produced north of Sacramento for a couple of years. Many of our ornamentals, such as the acacias, eucalyptus, and tender varieties of palms appear to be badly injured."

A. D. Shamel, Riverside, Calif.

"Last week was spent working on our lemon report and particularly in describing systematically our progeny strain characteristics," he writes on January 9. "This work is especially interesting to us from the fact that the characteristics of these strains originating as bud sports have been perpetuated through bud propagation in our progeny tests. These results confirm strongly our belief in the importance of bud selection in the lemon varieties. Lemons are selling for high prices just now, apparently due to the reoccurrence of the 'flu' epidemic throughout the county, as lemons are widely used in the treatment of this disease."

C. E. Schuster, Corvallis, Ore.

"Preparations for filbert pollinations are going ahead in fixing the sacks and sacking the flowers on the trees in the field," he reports early in January. Tabulations of data for the annual report are also being made.

"The temperatures are very mild at the present time, with a superabundance of rain. Apparently very little damage occurred in the recent cold spell among walnut and filbert trees, although a report came in this morning that nursery stock was showing some damage. The worst damage among all fruits apparently occurred among the strawberries, but it still remains to be seen what the exact extent will be in all lines."

George M. Darrow has revised Farmers' Bulletin No. 1399, "Blackberry Growing," and the new edition is now ready for distribution.

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

H. C. Diehl, Seattle, Wash.

"Most of the week was spent in Portland attending conventions of the Northwest Canners and Fruit Barrelers Associations," he writes January 7. "Our participation included informal talks by Berry and myself, an exhibit of frozen pack fruits and vegetables prepared by both of us, attendance at the more technical conferences and participation by myself in the canned fruit and vegetable cutting and superintendents' conference. Due to excellent working and display arrangements provided by the American Can Co., reasonably good material, and exceptionally keen public interest, the frozen pack cutting was the most productive affair of that sort which I have ever conducted.... The asparagus, corn, peas and peaches were particularly good. Of course, frozen pack peas have such a striking vivid green color and general attractiveness that it is not surprising that most interest centered on these.

"While the frozen pack exhibit was in progress, the Northern Pacific Ry. had on display in the loading shed of the American Can Co. refrigerator cars of four series: NRC 300, NRC 800, NP express 2100 and NP 90000. The second named car is a new one especially built for frozen pack transport, equipped with 6-7 inches of hairfelt and celotex insulation, permanent side racks, divided basket bunkers and an aluminum outside paint job. Ireland of Portland told me a car of this series with 25 per cent salt carried frozen pack in cartons in September with an average load temperature of 10°F. and a top temperature of about 20, when Pasco and Glendive day temperatures ranged in the 90s. To a layman the car looks like an unusually effective piece of rolling stock, equipped with spring buffers and passenger car trucks....

"This season marked the first real trial of the halving, peeling, and coring machines, developed by a group at Olympia under the leadership of Mark Ewald, next president of the National Canners Association. Mechanical difficulties remain to be ironed out, but the uncanny accuracy of the machine is astonishing and the product is surprisingly uniform....

"The convention had a number of banquets, of course, which we attended with appropriate gusto and consequent appalling effects on the weight charts of us both. We are happy to be again at work in Seattle, although the convention was for the laboratory one of the most satisfying of recent years."

We might add, editorially, that we have word that those attending the meeting (including canners and packers) were enthusiastic over our frozen pack products and the contributions that we are making to this field--and the hope was continually expressed that it would not be necessary to curtail the work as a result of the Federal economy drive.

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS

C. W. Mann, Pomona, Calif.

"Inspections have been completed of the early picked lots of grapefruit in the experiments on the relation of storage temperatures to various forms of injury occurring on the rind of the fruit.

"Mr. Gray was in Yuma, Ariz. the early part of this week," he continues, the report being dated January 14, "where he obtained storage lots of grapefruit representative of the desert conditions under which this fruit is grown in Arizona.

"Conferences have been attended recently with representatives of steamship lines and fruit shippers for consideration of ways of improving stowage to obtain more uniform cooling and better refrigeration of citrus fruit cargoes. Due to the lower cost of transporting this fruit by shipping via the Panama Canal to New York, there has been considerable increase in boat shipments in recent weeks. The forwarding of oranges regularly by this route to New York was started last fall. With the improvement in the service which is provided on ships recently equipped with refrigeration, as well as the more favorable rates and the faster time of ships which now deliver the fruit to New York in 14 days from the packing house, some of the obstacles to the development of water transportation for inter-coastal shipments seem to have been overcome.

"The unusually low humidity in citrus districts of Southern California during the months of October and November is generally believed to be responsible for a slowing up in the growth of Washington Navel oranges for which rate of growth of the fruit is reported to be under that of any season in the last three years. Control of decay has been made more difficult, due to the widespread injury to fruit in groves resulting from the exceptionally high winds which occurred in December and again, with even more serious consequences, last week, in nearly all citrus districts in Southern California."

TRUCK CROP DISEASES

Wm. D. Moore, Charleston, S. C.

"General weather conditions have continued very favorable for plant growth during the week," he writes for the week ending January 14, "though the 14th was somewhat colder than for several weeks.

"We have had one light rain during the week, but all lands remain in good condition for all types of plowing. Such crops as spring cabbage, carrots, beets, lettuce, etc. are considerably advanced for this period. A small amount of spring cabbage continues to be set in the field but the total will, very likely, be far below that of last year. Land preparation is being done for potato planting, but most farmers as yet do not know what they will be able to do with respect to this crop. Three of the largest farmers in this section are reducing their potato plantings as follows: first, 600 to 250; second, 500 to 70; and third, 500 to 150. The general opinion is that the average planter will have to cut his operations radically."

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

C. O. Bratley, New York City. (New York Market Pathology)

"The week before Christmas was marked by the arrival of an unusually large supply of Florida citrus fruit," he says under date of January 16. "Arrivals for the week amounted to 295 cars of oranges, 135 cars of grapefruit, and 80 cars of tangerines. As a consequence," he adds "prices dropped from 15 to 25 cents per box for oranges and grapefruit; and from 35 to 50 cents for tangerines.

"Included in the above figures was a large boat shipment from Tampa. Three of the large shippers chartered the United Fruit Steamer LIMON, loaded it with 42,000 boxes and shipped it to New York. The boat docked on December 15th, the same day as the arrival of a 48-car train of Citrus on the SEA TRAIN steamer. Fruit from the S.S. LIMON was unloaded onto the United Fruit pier where it was held for delivery. The oranges and grapefruit were packed in the usual citrus box. Tangerines were packed mostly in bulk in half-bushel baskets and James crates.

"Because the usual facilities for display and auction of the fruit were not open for the boat shipment, a large warehouse room in a building across the street from the regular auction rooms was rented. Part of the shipment was sold each day, but because of the poor prices obtained, some of the fruit was not sold until after Christmas. The selling prices were slightly below the average wholesale prices for the day.

"During December the equivalent of 9 cars of melons (casaba type) from Spain arrived by steamer. Such melons are imported during the months from August to January. The usual loss from decay in the early shipments is from 10 to 15 per cent. In the latter part of the season losses as high as 80 per cent are not uncommon. A recent shipment containing about 80 per cent decay was repacked, 60 per cent of the melons were discarded, 20 per cent were sold although they contained small decayed spots, and 20 per cent were packed as entirely sound. The most prevalent decay was an Alternaria Rot similar to a common decay on melons from western United States."

Flower lovers will be glad to learn that "Roses for the Home," issued as Farmers Bulletin 750, back in 1916, has been revised by Doctor Mulford. The revised bulletin contains 34 pages, with 26 text figures. While "a rose by any other name would smell as sweet," Doctor Mulford points out that its name is in reality practically the same in all languages.

THE DEPARTMENT'S GRADUATE SCHOOL

The announcement of the beginning of the second semester of the Department's Graduate School, conducted under the direction of Dr. A. F. Woods, reveals that a number of interesting new courses have been made available to our workers.

Dr. B. H. Carroll is beginning on February 13, the first semester of a course on the principles of photography--a course planned for those using photography as a scientific or technical implement. Because of the difficulty of arranging formal laboratory instruction, however, the students should have dark room, camera, and the usual equipment available for thier "home work."

Dr. P. N. Annand, has started the first semester of a course in entomology, intended for students without previous entomological training. It consists of a study of elementary insect morphology, insect metamorphosis, classification and methods of control. Dr. Charles Thom is giving a course on molds of the bacteriological laboratory, but this is actually a continuation of his course in mycology given in 1931-2. Dr. Ernst Artschwager began on January 20, a course on the anatomy of plants, designed chiefly to give practice in identification and interpretation of normal and diseased plant tissue. Doctor Blake continues his popular course in systematic botany, the second semester being devoted to the identification of wild plants--and including one or two short field trips.

Doctor Waite continues his graduate course on the ecology of plant diseases.

The importance of the work of the Graduate School has been recognized by the Civil Service Commission, which says:

"In addition to the courses given by the Universities and Schools of special class, both the Bureau of Standards and the Department of Agriculture give a number of valuable courses in technical and professional lines which, as in the case of the school classes, are arranged at hours so that Government employees may attend them. Graduate work in these departmental courses is accepted by a number of the standard universities as credit toward a higher degree."

Of added importance is the fact that special courses are added whenever enough employees become interested so that the courses may be self-supporting. And the terms are moderate, a reduction having been made to conform with salary reduction, the cost now being $12.50 for one semester and $9.00 for the second. Information regarding the courses, hours, etc. may be secured from Dr. A. F. Woods, Director of Scientific Work, who is also Director of the Graduate School; or from Mrs. N.E. Fealy, Secretary, Office of the Director of Scientific Work.

ADMINISTRATIVE NOTES

Radio Messages. Some of our project leaders have found that in sending messages to workers abroad considerable money may be saved by using the Army or Navy radio service. The Army and Navy have now made a general offer to transmit radiograms for us without charge where practicable. Mr. Schoenhals has checked up on this and finds that substantial savings may be made by using radiograms instead of telegrams in transmitting messages from (and to) most of our western and southwestern field stations in particular--Washington, Oregon, Idaho, Utah, California, Colorado,- as well as in other States--Texas, Wisconsin, Louisiana, etc.

Where the field station is located some distance from the radio station, messages are relayed by telegram, the cost of the latter being charged to the project concerned. Even in these cases considerable is saved owing to the shorter distance over which telegrams are sent. Our telegraph officials tell us that where the combination of radio and telegram is used there will not be a dealy of more than two or three hours, so that ordinary telegrams and day and night letters may as well be sent via radio. Where it is imperative that telegrams reach the addressee with no delay whatever, straight commercial telegraph service should be used, the message being marked "Telegraph--RUSH." It is proposed, however, to use the Army and Navy radio service where practicable--for outgoing as well as incoming messages.

Department radio messages have the following classifications: priority messages, given preference over all other traffic; rush messages, transmitted in the order of their filing and delivery ordinarily made in two or three hours; routine messages, transmitted in order received and which should reach destination not later than the opening of business the next day; and night messages, transmitted in the order received and which should reach the addressee not later than the opening of the next business day. Messages not marked with any classification are considered as routine and the delay for these is negligible. Ordinarily these messages are delivered the same business day, provided they are received at the refile point in time to effect delivery during the business day by commercial telegraph day letter service. If not, the messages are then sent by "night letter" rate for delivery the morning of the next business day. In preparing messages , therefore, please see that they are marked Via Radio, and indicate the classification: priority, rush, routine, or night.

Since there are considerable funds now tied up in project allotments for telegraph service which may be released by the use of the Army and Navy radio services, it will be to the interest of all concerned to make the greatest possible use of the radio. Workers at field stations where we have found that substantial savings may be made by using the radio or combined radio and telegraph, have been notified. If you have not been notified, it will be well for you to investigate for yourself to find out whether you could use the r adio to advantage in your telegraphic communications.

ADMINISTRATIVE NOTES

Identifying Payments, etc. On several occasions recently our business office has had requests from firms asking that some mark of identification be placed --typed--on Government checks to show bills for which payment is being made in order that the concern may give proper credit for our payments.

While it is not possible to do this, a sure means of identification can be provided if proper notation is made on the slips (check riders) which should accompany each voucher for supplies to show where check is to be mailed. This slip is, of course, sent forward by us with the original voucher and is enclosed with the check sent out by our Disbursing Office.

We have had considerable difficulty, especially with the large oil companies and other firms doing considerable business with the Government, by reason of the fact that these slips do not always give sufficient information to identify the payment. It is therefore requested that careful attention be given to having these little slips filled out in sufficient detail to enable the dealer to know exactly the purchase for which the check is intended. Employees who certify the vouchers for payment can check up on this, and very often the companies themselves may be asked to make notations on the slips which will tie up the checks with the bills they cover.

The slips to which we refer, of course, accomapny the No. 1034 white vouchers "for purchases and services other than personal," and bear in the lower left-hand corner the number "8-5720". One should be attached to every No. 1034 voucher and, as indicated, above, give not only the address to which check is to be mailed, but sufficient information to enable the dealer to tell exactly what account the check is to pay.

Automobile License Plates. Whenever U. S. Department of Agriculture license plates on Government-owned cars become soiled, marred, unsighlty or illegible, it is important that they be replaced with new ones. In such cases new plates should be requested of our business office (Mr. Swartz), with an explanation concerning their need. Upon receipt of the new plates, the old ones should be returned to us to be handed in to the Department's central supply section for destruction.

Particular care must be taken at all times to prevent any unauthorized use of license plates procured or issued for official vehicles.

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The OFFICE OF
HORTICULTURAL CROPS AND DISEASES
SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVIDION OF HORTICULTURAL CROPS AND DISEASES

S E M I -- M O N T H L Y N E W S L E T T E R

The official organ of the Division of Horticultural Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.

John A. Ferrall, Editor

This NEWS LETTER is for distribution only to employees of the Division, and the material contained in it is of an informal and confidental nature, and is not to be published without securing the prior approval of the Division of Horticultural Crops and Diseases. The reports of field workers, of course, represent their personal opinions and are not necessarily the official and final word on the subjects which are discussed.

Vol. V Washington, D.C., February 15, 1933 No.4

Progress reports

I once saw a letter from an assistant to a project leader who had been detained in the field somewhat longer than expected. After expressing regret, the assistant added "but I am sure the Department will benefit every day you are away from Washington." I've often wondered just what interpretation the leader placed on that sentence.

However, there need be no such uncertainty regarding the memorandum which has recently been sent to project leaders in connection with the annual reports of progresson our projects--an original and carbon copy of these reports to be in Doctor Auchter's office by March 15, 1933.

"It is again time to ask for the annual report of progress on projects," reads the memorandum for section leaders, dated February 3, and signed by Doctor Auchter. "In making this request, there is little to be said except to repeat the statements made a year ago in the same connection. As the reports of 1931 were more satisfactory than previous reports, so were those submitted a year ago better, as a rule, than those for 1931. They were better for the same reasons that those for 1931 were superior to earlier reports: They were more informing than previous reports and gave a better conception of: (a) the nature of the activities that had been in progress; (b) where the work had been performed; (c) and what had been accomplished -- that is, what the taxpayer was to get for his money. The reports now being requested will be satisfactory in just about the degree to which they contain this same information for the year covered by them."

Of course, in a time such as this with a strong demand for economy in all Federal activities, we must support our work by definite and concrete reports, rather than abstract statements. One of our friends in explaining the terms says that when his wife promises to bake a cake, that is abstract; when she bakes it, it is concrete. Anyway, extraordinary emphasis must be placed on the need for giving concrete facts regarding your work, its significance, its actual progress and the value and meaning of the results to the industry--and to the taxpayer. You can scarcely overestimate the value of statements of specific accomplishments in hearings before the Budget Bureau, before Committees in Congress, and, for that matter, with the public in general. Put as many such statements in your reports as is possible.

"In the requests for these reports a year ago," says Doctor Auchter, "attention was called to the frequency with which they are used as sources of information, needed in a great many instances without delay by the Chief of Bureau for answering, it may be, some inquiry from Congress, or for some other emergency purpose. Their value when properly prepared is not easily overestimated. The investigations carried on by our Division have become exceedingly varied in character and widely distributed throughout the country. These reports constitute an essential feature in keeping the administrative members of the staff adequately informed regarding the work. The point is--make the reports just as informing as possible. It should be understood, however, that it is not necessary, or desired, in describing the activities, to include experimental data or any considerable amount of detail. An informing statement descriptive of the character of each activity, with a brief summation of the seasonal result will supply the material needed.

"From the Bureau standpoint, these progress reports should cover the fiscal year ending June 30, 1933. As a matter of fact, in much of our work the accomplishments that can be reported on a fiscal year division are based on the 1932 crop. Such additional statements as relate to the first part of 1933 will concern only work started but with results prospective. Of course, the work in some of the projects is not predicated on a crop season basis. Therefore, in preparing the reports, please include activities for the present fiscal year thus far and briefly forecast the character of the work that is prospective to the end of June.

"In preparing the Division report which is required by the Chief of Bureau, we are usually requested to submit it in two parts; one is the full, complete report as indicated; the other is a very brief presentation of the accomplishments that stand out in their importance, and which will make telling items for inclusion in the annual report of the Chief of Bureau to the Secretary.

"It will be of great assistance in the preparation of this report of 'high points' if each Section Leader will indicate briefly what items in his report he would select to be included in it.

"Those more directly in charge of the various lines of work are in a better position than any one else to pick these items of greatest significance. The best guide throughout the preparation of these reports that we can suggest is, that each one put himself in the position of the one who is called upon to defend and support your work in hearings before the Budget Bureau and Committees of Congress, and then for each one to supply the most telling facts and accomplishments that conditions permit.

"In addition, please clearly set forth any specific pieces of research that have been completed during the year. We are sometimes criticized for seemingly never finishing a project and dropping it. We do, however, complete particular problems under the projects. It is these features that should be brought out in this connection.

"Please submit the reports by March 15. An original and one carbon copy should be sent to this office. Copies of reports supplied by members of the various project groups desired by Section Leaders for their own files should be requested by them, in addition to the two copies for this office."

Definite statements of specific accomplishments count in hearings before the Budget Bureau, before Committees in Congress, and with the public generally. Put as many such statements into your reports as possible.

We have an excellent case, and our only worry is about presenting it in the most effective manner. Practically every bit of the work done by the Division has for its object increasing the returns to industry. We go even further than that, because on more than one occasion the work has meant the very life of the industry. Doctor Walker's yellows-resistant cabbage varieties, for example, prevented the dismantling of kraut factories and the abandonment of cabbage growing in some districts.

And our work deals with one of the most important agricultural industries--fruit and vegetable growing, with bulb and flower culture added to landscape gardening to complete the circle. Here we have a four billion dollar industry--figured on the 1930 census and our departmental crop and market data. A thing as valuable as this must have constant and careful attention.

This attention, which we may group under the term research, does not necessarily mean increasing total production. Under present conditions that is scarcely desirable. It means rather producing better quality crops at lower cost--and that is not only desirable but absolutely necessary to avoid disaster. Well, we can do that; we are doing that.

You tell 'em!

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

Edwin Smith, Wenatchee, Wash.

"Messrs. Hukill, Gorman and Killingstad arrived in Wenatchee on January 26," he writes under date of January 30, "and with Mr. Hallison have been equipping cars and preparing for the winter test trip.

"Preparationshave been made for departure any time after January 31st as favorable weather conditions are indicated. The test is to contain two standard cars of apples under inside control, one car under CPS without fans, one car under CPS with fans, one car with wet sawdust protection closely following its installation at Medford, and one car with wet sawdust protection being modified by raised floor racks over burlap covering to insure air channels beneath the floor racks and above the wet sawdust.

"The writer departed for Medford on the night of January 26th and appeared before the Fruit Growers League of Jackson County at Medford on January 28th. Papers were given by Messrs. Work and Aldrich relative to experiments at the Medford Experimental Orchard and the writer discussed the transportation work of the Bureau covering pear shipments in shipping tests, European ships, intercoastal ships and winter overland shipments, giving special attention to the December test trip out of Medford, and using lantern slides for the discussion. The meeting was well attended and general interest was expressed in the Bureau's work."

FRUIT AND NUT PRODUCTION

Geo. P. Hoffman, U. S. Pecan Field Station, Meridian, Miss.

He writes on January 28 that the tractors are in operation and that there should be no question, except in case of rain, but that the ground will be ready for planting when the trees we are sending arrive.

"Office space has been assigned me in the Post Office Building, Room 309, through the help and cooperation of the Federal Business Mens' Group," he says. "This group has been most helpful to me and their spirit of cooperation is all that one could ask. The high regard which everyone here has for the work of the Department and our station here is most encouraging.

"From the great number of daffodils--in almost every yard and now in full bloom--that one finds growing to perfection here and with almost no care, it would seem that there is promise in this section for bulb culture. A small plot of narcissus has been planted on the station grounds. Pineapple pears, wild plum and some native shrubs are either in full bloom or breaking bud," he adds.

FRUIT AND NUT PRODUCTION

Milo N. Wood, Sacramento, Calif.

"Approximately one half of the week has been taken up with the making of a survey of the effects of the December freeze upon walnut orchards," he writes January 21.

"In that part of the Sacremento Valley lying north of Sacramento, the damage is probably much more serious than is generally realized. Owing to the warm weather preceding the freeze the trees were not as fully dormant as is usually the case during December. It was found that the trees were injured in various extents. In practically every orchard visited, some damage resulted. In some orchards the injury to the cambium tissue is confined to the larger branches, but in many of the orchards the living tissue in the bark and cambium appears to be dead in the trunks of the trees as well as in the branches.

"In many cases it is doubtful if the trees can recover. In others it is probable that there will be much sour sap this spring, together with splitting of the bark when growth starts. The freeze has not only damaged young trees but many of the older trees as well. Some of the older trees in the Valley which have escaped serious damage for many years were seriously injured by the freeze this winter. Many fine walnut orchards are practically ruined. It is, of course, evident that the crop in the Sacramento Valley will be greatly curtailed.

"As yet I have not investigated walnut orchards in the San Joaquin valley or in the Western Coastal sections north of San Francisco. It is probable that some damage has been done in these orchards too. At Chico, the records show that for several days the thermometer dropped to points varying from 11 to 19° F. above zero, and in some cases in other parts of the valley it seems that the temperature of one night was very close to zero. It is therefore no wonder that the partially dormant trees were greatly injured.

"Investigation of the almond stock budded to the promising trees resulting from the breeding work shows that the buds have set very well and unless there is more injury from the freeze than I expect in these dormant trees, we will have a considerable number of trees available for distribution next winter.

"I have found it necessary to go over the specimens of nuts obtained from the almond crosses and outline a plan for planting them in the nursery. It will be necessary to stratify some of them at once. The recent heavy rains have soaked the ground up well, therefore, they will be planted in the nursery very soon."

FRUIT AND NUT PRODUCTION

H. L. Crane, Albany, Ga.

"Due to the poor prices of pecans in 1931 and the very light crop in 1932, and to the general financial condition of the country, the pecan growers in this section are not in position to do much in their orchards this year," he writes on January 28. "In the fall of 1932, the area of orchards planted in winter cover crops would not exceed one-half of that planted the previous year. In 1931, the planting of winter cover crops was tremendously reduced as compared to the planting in 1930. From all indications, the amount of fertilizer used this year will be greatly reduced as compared to former years. In all phases of production the pecan growers have been forced to retrench. This condition is having its effect on the orchards, as in many cases they are showing the effects of this inattention."

On January 14, he had written that they were removing old nursery trees and pruning the old seedling orchard at the U. S. Pecan Field Station. "Because a very light crop of nuts was expected, this orchard was pruned quite severely in the early spring of 1932," he said. "Following this pruning and the liberal application of sulphate of ammonia, together with the very light nut crop, these trees made an unusually good growth. The new shoots are long and very stocky. This orchard is being pruned lightly this year, as we expect the largest crop of nuts in the history of this 37- or 38-year-old orchard.

"On Tuesday afternoon, under the auspices of the Albany Pecan Club, a pruning demonstration was given in the Taylor orchard four miles south of Albany. At this time an informal talk was made outlining the need for pruning and the principles underlying the practice. The results secured from pruning pecan trees were discussed. In this orchard there are trees which we have pruned one and two years. The results of this pruning on the nature and distribution of the new shoot growth was studied, as compared to that of similar unpruned trees.

"After this, types of tools and ladders suitable for pruning pecan trees were shown and discussed, then we went into trees which had never been pruned in the 20-22 years of their lives and demonstrated how to prune them.

"This was one of the largest attended meetings the Albany Pecan Club has held, as about a hundred interested growers were in attendance, some of whom came more than a hundred miles to attend the meeting."

"The activities of the laboratory were confined to the usual routine such as analysis of pecan shoots and nuts, and the tabulation of data.

FRUIT AND NUT PRODUCTION

Elmer Snyder, Fresno, Calif.

Writing on January 28, he says: "A stop was made at the University Farm, Davis, Calif. and grape matters were talked over with Dr. Winkler and Mr. Jacob. More and more interest is being shown in stocks resistant to nematode infestation (if any), and several plots will be established in interested counties through the cooperation of the local county agents. Assistance is being given along this line by furnishing stock cuttings and advice relative to the selection of root-stocks, and the planning of the plot."

The grape nursery at the Fresno plot was taken up during the week of January 9-14. Individual weight records were taken on 42 different phylloxera-resistant stock varieties under propagation tests. Weight records and percentage rootings were recorded for all the checks grown. The entire nursery has not yet been tabulated, but approximately 10,000 rootings were obtained.

C. P. Harley, Wenatchee, Wash.

"I attended the annual meeting of the Okanogan Horticultural and Traffic Association at Omak on Friday, the 27th," he writes on January 30. "This meeting was very well attended, and considerable interest was shown in the program which consisted, in the main, of certain addresses which had previously been given before the Washington State Horticultural Association.

"More attention was given at this meeting to the question of codling moth control than at any previous meeting there which I have attended. It appears that although their infestation in that district is considerably below that of the Wenatchee district proper, the moth is gaining ground each year.

"Our talk on fruit bud formation was very well received, for many of the growers were particularly interested in its possible application in correcting biennial bearing. During the past year or two, many of the young orchards in this district have been set to Newtowns and consequently their interest was aroused as to the possibility of handling this variety to produce annual crops."

He adds the encouraging note that as the bulk of last year's crop goes out of the valley and attention is directed toward raising next year's, a little more optimism seems to be apparent than has been shown for some time.

FRUIT AND NUT PRODUCTION

C. E. Schuster, Corvallis, Ore.

"Conditions in the field have been very difficult on account of the snow," he reports under date of January 28. "With the ground unfrozen and a layer of snow two to eight inches deep, travel on the side road has been almost impossible unless one is familiar with the road.

"The development of the catkins and pistillate flowers of the filbert has been almost stationary for some time. Temperatures have been too cool, with very little development going on. If conditions are at all favorable a little later, it will be an ideal season, as the pistillate flowers have become well developed in comparison with the catkins of the late varieties."

Pear Research in the Rogue River Valley, Medford, Ore.

The meeting of the Fruit Growers' League of Jackson County, Inc. at Medford, Ore. on January 28, is reported to have been very much of a success. The first paper, by Edwin Smith of our Division, outlined the type and value of the work being done by the fruit and vegetable handling, transportation and storage investigations unit, and reported in some detail upon the practical value of the results from the most recent Medford-to-New York transportation test.

The second paper, by Arch Work, explained (1) that all moisture in the soil was not available to the trees, and (2) that up to 60 per cent of the maximum available, increasing the available soil moisture resulted in increased fruit growth.

A third paper, by W. W. Aldrich, discusses some of the results of the pear production research, showing that increasing the available soil moisture resulted in (1) increased size of the fruit, (2) increased length of branch growth, (3) apparent decrease in the amount of bloom the year following a dry June, and (4) increased set of blossoms.

Dr. Charles Brooks' paper on "Spoilage of Stone Fruits on the Market," has been issued as U. S. Department of Agriculture Circular No. 253. Inspection certificates of the Bureau of Agricultural Economics for the years 1922 to 1928 while covering less than 3 per cent of the total car lot shipments of peaches, for example, show that on this 3 per cent alone there was a development of decay in transit due to brown rot and Rhizopus rot that at average market prices meant an annual loss of about $200,000.00!

FRUIT DISEASES

A. J. Riker, Madison, Wis.

"In planning for our further physiological studies on cell-stimulating bacteria," he writes, "it has become apparent that we will need to make up a considerable variety of media that should be mixed after being sterilized. In order to handle this and various other phases of our work, I have been trying to secure a small space which could be made reasonably sterile and at the same time comfortable. The transfer chambers we have used heretofore, into which we have turned live steam, were not fully satisfactory. In connection with the ventilating equipment in our new constant temperature room, we have installed some air-mat filters which seem to take out air contaminations to a very satisfactory degree. Preliminary tests suggested a great deal of promise."

H. F. Bergman, Amherst, Mass.

Writing late in January, he reported that the very mild winter weather had continued with complete absence of snow. This information arriving a trifle late to catch the February 1 issue of the NEWS LETTER, we trust the weather officials have been considerate enough to hold off the snow and cold weather until this gets into type. The mild weather had decided advantages in one respect--it permitted the cranberry growers to do much work around the bogs which ordinarily could not be done at this time of the year.

"Mr. Truran and Mr. Kelley have been busy at East Wareham this week getting out samples of cranberries for the last storage test," he wrote on January 21. "Many of the lots of berries were in very bad condition. Even lots of berries which have up to the present been in good condition are now rotting badly. This is as late in the season as it had been planned to run the test, but it would be impossible to make another one later even if we had wanted to do so."

M. A. Smith, Ozark Fruit Disease Laboratory.

Mr. F. W. Faurot, Director of the Mountain Grove Fruit Experiment Farm, visited the station late in January, bringing the rather discouraging information that the State appropriation for the operation of the Mountain Grove farm for the coming biennium has been so reduced that there will be barely enough funds to carry on the work.

The annual meeting of the Marionville fruit growers was held on January 16, at Marionville, Mo. he reports, and included several trips to orchards in the vicinity. The addresses later were followed by a round table discussion of fungicides, insecticides, pruning and soil management.

FRUIT DISEASES

Paul W. Miller, Corvallis, Ore.

"During the current week," he writes under date of January 21, "my attention has been called to a report from Dr. J. W. Hotson, Professor of Botany at the University of Washington at Seattle, Wash. to the effect that he has located three chestnut trees in Seattle which are infected with chestnut blight.

"Two of these trees were found on the campus at the University of Washington, and the other at Laurelhurst, a suburb of Seattle. Apparently the tree in Laurelhurst was grown from seed sent from New York State. Dr. F. D. Heald of Washington State College has confirmed Professor Botson's diagnosis. This is the second report of chestnut blight in the Pacific Northwest, the first case of the disease having been found near Gunter, Ore. in November, 1929...."

Leslie Pierce, Vincennes, Ind.

"The fruit buds of peach trees have advanced very rapidly the past ten days. The buds are now showing white at the tips where the outer scales have been spread apart by the expanding flower parts. The petals, pistils and anthers of the flowers have doubled in size since December 20. In their present stage of development, a temperature of zero would kill only a small percentage of the peach fruit buds." This was written on January 21.

"Mr. A. H. Burkemper, representing the St. Louis branch of the Grasseli Chemical Co., called at this office during the week. He informed me that his company is marketing a flake form zinc sulphate that is more readily soluble in water than the granular form we have been using the past two seasons. The wholesale price of the product will be about $2.50 per hundred pounds. The retail price in Vincennes last season for the granular zinc sulphate was $3.10 per cwt."

J. B. Demaree, Albany, Ga.

Writing from the U. S. Pecan Disease Field Laboratory on January 28, he says: "With the exception of one or two days with light frosts, the weather continues mild.

"The sand, or pineapple pear, is now about in full bloom. One peach tree, perhaps a seedling, was seen blooming in Baconton. All shrubs that ordinarily bloom in March are in full bloom. Tung oil, chinaberry, crepe myrtle and other early growing shrubs and trees are putting out new leaves."

FRUIT DISEASES

H. E. Stevens, Orlando, Fla.

Writing from the U. S. Citrus Disease Field Laboratory at Orlando on January 28, he said: "Open bloom on some avocado varieties at the laboratory appeared about January 15-20.

"Citrus bloom in the Orlando section is beginning to appear rather scatteringly. Slight rains during the past month have been of considerable help, but cold weather for short periods has slowed up the growth from time to time.

"Recently a trip was made into the Ft. Myers and Miami sections. Citrus in the Ft. Myers section appears to be further ahead in growth than in the Orlando locality. New growth put out some weeks previous, and a scattering of bloom is appearing.

"Drouth conditions still prevail. Mangoes were out in heavy bloom throughout the Ft. Myers section. As yet, very few avocado trees show any tendency to start blooming."

John C. Dunegan, Fayetteville, Ark.

"The Extension Service of the University is advising the growers to make moderate plantings of peach trees to maintain the present acreage in Arkansas," he writes February 4. "Although at the present time the number of young trees is larger than in most competing States, new plantings are not large enough, on the basis of 14 years as the average commercial life of an orchard and an annual average replanting of 7 per cent of the total number of trees, to maintain the present acreage. The Elberta is the variety which is suggested for planting in most of the State, but small plantings of Mayflower, Early Wheeler, Fair Beauty and Belle of Georgia, may be desirable, though growers are cautioned against extensive plantings of these early-maturing varieties."

TRUCK CROP DISEASES

Wm. D. Moore, Charleston, S. C.

"January closed with a rainfall of slightly more than normal for this section, a condition that has not been experienced for more than three years," he writes February 7.

"As a consequence, all lands are in excellent condition so far as preparation is concerned. Temperatures continue somewhat above normal. The few crops that are in the fields at this time are growing rapidly and are considerably advanced for this season of the year. Some potato planting is under way but for the most part this entire section is in confusion so far as general planting is concerned."

FUNGICIDES FOR FRUIT TREES

At one of our recent staff meetings, Dr. M. C. Goldsworthy and Mr. E. L. Green told us something of their work with fungicides for fruit trees. The work on this fungicide project has consisted primarily of a study of the injury to host plants by sprays, and means of lessening or preventing it.

Doctor Goldsworthy gave a detailed account of the reasons for the project and, especially, its connection with the other projects of the Division. The factors, which operate to interfere with the success of the other divisional projects, were outlined and the various activities of the group experimenting with fungicides were discussed. Attention was drawn to the testing of fungicides and to some of the drawbacks of the standard materials used.

Especially interesting was the discussion of the methods of research and the materials used. It seems that twenty-five different fungicidal combinations was used in the tests discussed, with apple, peach, pecan, filbert and persommon trees being included in the experiments.

Mr. E. L. Green discussed the properties of an ideal fungicide, the drawbacks to the use of organic chemical materials as fungicides, and the reasons for the continued use of copper and sulfur in the spray program.

Particular attention was given to the use of very insoluble pure copper compounds and to the methods of making the materials adhere to the foliage. Excellent preliminary results were obtained with finely ground copper oxide, copper silicate and copper phosphate, the first two being suitable for peach, while all three were suitable for apple.

Copper phosphate apparently was responsible for the retention of the young fruits on the sprayed portion of an apple tree, since none or very few developed on the rest of the tree, which was unsprayed but free from diseases and insect pests which would cause the fruit to drop.

An adhesive, formed by the deflocculation of bentonite by lime, was also described. The remarkable properties of this material were discussed, and its effects on the various insoluble compounds and standard fungicides outlined.

Fungicides for peach and apple tested during the past season promise to be of considerable value to the industry, and the new methods developed have resulted in a great deal of progress in the laboratory and field examination of fungicides.

ADMINISTRATIVE NOTES

Paper Supplies for Field Use. Inasmuch as a new contract has just been entered into by the department (with Perkins-Goodwin Company) for supplying paper for use at field stations, etc., your requirements for paper of all kinds should hereafter be anticipated and the orders placed through the Washington office.

Purchases of paper in the field from now on cannot be approved or vouchers passed for payment unless accompanied by a statement in triplicate (signed in duplicate) showing that the paper was needed for immediate use and that serious interference with your work would have resulted by delaying to make purchase through the Washington office.

This new contract in addition to covering the requirements of the entire field service of the Department of Agriculture, also covers those of the Departments of Commerce and Interior, and includes all items of letter paper, both thin and heavy, white or colored; newspaper, wrapping paper, bristol board, blotters, cover papers, etc.

The prices are considered very reasonable, but are made on the basis of f.o.b. the mills, so your requirements should be anticipated for a considerable period in advance in order that costs of transportation may be reduced by shipping considerable quantities.

Labor furnished by Experiment Stations. Reference is made to Mr. Schoenhals' circular letter of February 4, to the field staff, announcing the decision of the Comptroller General that vouchers in favor of experiment stations covering reimbursement for labor assigned to Government work could not be approved because personal services of this character are for direct hire and payment when made is to be made to the employee and not to a third party.

The Comptroller General has since been requested to authorize payment of experiment station vouchers covering labor assigned to our work which was paid for by them before receipt of notice of the Comptroller's decision. A number of these vouchers have accumulated in the Bureau accounting office and will be forwarded for payment upon receipt of favorable reply to this request.

If there are additional claims of this nature covering personal services paid for by experiment stations up to January 31, they should be submitted to Mr. Swartz immediately in order that they may all be handled for payment at the same time.

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The OFFICE OF
HORTICULTURAL CROPS AND DISEASES
SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF HORTICULTURAL CROPS AND DISEASES

S E M I -- M O N T H L Y N E W S L E T T E R

The official organ of the Division of Horticultural Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.

John A. Ferrall, Editor

This NEWS LETTER is for distribution only to employees of the Division, and the material contained in it is of an informal and confidental nature, and is not to be published without securing the prior approval of the Division of Horticultural Crops and Diseases. The reports of field workers, of course, represent their personal opinions and are not necessarily the official and final word on the subjects which are discussed.

Vol. V Washington, D. C., March 1, 1933 No. 5

Radio Activity. There is an axiom among merchants that the customer is always right. It is supposed to be the height of tactfulness to express entire agreement with those upon whom we depend for our support. There are exceptions to the thing, of course, and one of them is illustrated by the story of the merchant who was scolding one of his clerks. "Why, what do you mean by arguing with that lady!" he demanded. "Let her have her own way. Remember, the customer is always right." The clerk raised his hands. "Why, boss," he cried in horror, "she was saying that we are swindlers!"

We of the Federal service have all of the people as our customers. We, too, try to be tactful. But there is a limit--a time when unjustified criticism must be met with the weapon of facts. The radio is offering us an excellent means of presenting our side of the case to the people interested, but as with the Press Service, the NEWS LETTER and other defenders of the faith, the problem is to get our workers to supply the ammunition. Hence it was not surprising to find Mr. W. R. Beattie, in discussing before a recent staff meeting the relation of radio to the dissemination of scientific information, making a plea for more and better material.

"It is a far cry from the signal fires of the savage tribes of prehistoric times to our present methods of communication," he said at the beginning, to add the desired literary flavor to his discussion. "Radio being the latest development in news transmission is naturally attracting most attention, and it offers a wonderful opportunity for the dissemination of scientific and other useful information.

Radio has built a system of regular programs that are looked forward to by the radio audience. The National Farm and Home Hour, for example, has become a regular daily event in the lives of hundreds of thousands of people and the potential audience is perhaps fifty or sixty million people! Naturally, to be effective, the radio program must be given in popular form, but popular presentation does not necessarily weaken or lower scientific standards or the results--it simply makes the facts understandable and entertaining to the average listener.

"We have four main radio channels through which the results obtained by our scientific workers may be presented," said Mr. Beattie. "The National Farm and Home Hour, the Farm Flashes, the Primer for Town Farmers, and the Housekeeper's Chats, each of which are on the air five days a week. Twenty minutes of the Farm and Home Hour is allotted to the Department each day. These programs are run on a definite schedule. Certain days are devoted to Crops, Livestock, Poultry, Dairying, etc. Our Garden Calendar has a place on the program each Tuesday. Five or six minutes are devoted to each presentation. Once a month we have a ten minute period for the presentation of some special line of work or some special results. On these occasions I arrange for some one from our Division to appear as guest speaker.

"Five to ten minutes a day or about 25 minutes a month may seem like a short time on the air, but when you consider that these programs are going out over a network of 48 radio stations and covering the entire United States east of the Rocky mountains, you will realize that the Farm and Home Hour offers a splendid opportunity to get timely information out to the people.

"Farm Flashes, Primer for Town Farmers, and Household Chats are mimeographed and mailed to the radio stations to be used as program fillers. The Farm Flashes go first to the Agricultural Colleges in certain of the States, where they are modified to suit local conditions and perhaps additional material included. The Farm Flash for Wednesday of each week is devoted to fruits and vegetables--but also includes ornamentals.

"The Farm Flash programs are of a semi-technical nature and are to a certain degree regionalized, special matter being prepared for the different crop regions of the country. In some cases the material will apply to several regions but as a rule separate material must be prepared for the different regions. For example, region 7 includes Florida and the Gulf Coast and must be supplied with special material. The same is true of region 12, which includes California, and region 9, which includes the Dakotas. We especially need material for use on the Pacific Coast, in the Great Plains area, and the Gulf Coast section, including Florida.

The Primer for Town Farmers was established, Mr. Beattie explained, as a means of supplying practical information for home owners and people who live in towns and who have lawns, ornamental plantings, and even vegetable gardens. This series deals with practical information that is readily available in printed form and so the assembling of material is not the problem met with in the case of the Farm Flashes and, to a lesser degree, the Farm and Home Hour.

A somewhat irritable gentleman who had been appealed to for aid, said to the applicant: "Why do you ask me for help? Haven't you any close relations?" The man nodded. "Yes, sir," he admitted. "That's the reason I'm asking strangers for help." It is somewhat humiliating to admit that Mr. Beattie was forced to a similar extreme--and compelled to turn his supposed discussion of the radio work into an appeal for help.

"My purpose in coming before you today," he confessed, "is to make an appeal that you as scientific workers furnish me with more material that I can use in getting up these programs.

"First, the results must have reached the stage where we are safe in giving them to the general public.

"Second, the results must be such that they can be presented in a way that the radio audience, or at least a considerable percentage of it, can understand.

"There is no reason, in my judgment, why we should defer giving the results of a piece of work until publication, as full credit can be given, and the radio permits us to get information to the prople immediately--of course, you must be prepared with mimeographed circulars, to answer the inquiries that the radio talk will bring to you.

"Since I've been given the job of representing the Division on the air, it is my aim to do a thorough job, but I can do so only through your support and cooperation. I can often get good material from some of the papers you present at scientific meetings.

In all, from 24 to 36 typewritten pages are required to keep up our share in the radio programs each week--and the radio, of course, observes few holidays and takes no vacations. Mr. Beattie also gives a 15-minute broadcast each week over station WRC in Washington. These broadcasts are known as "Timely Garden Suggestions," and were started at the request of the garden clubs of the District of Columbia and nearby points in Virginia and Maryland. These programs are now in their third year.

DISEASES OF ORNAMENTAL PLANTS

Dr. Freeman Weiss sends some interesting notes on the commercial forcing of ornamental bulbs in the Wilmington, N. C. district, in a letter to Doctor Auchter, dated February 16.

"I was surprised to see what a great increase has occurred in the area and equipment devoted to forcing narcissus and bulbous iris in cold frames here within the last year," he writes. "Every bulb grower in the Castle Hayne district (just north of Wilmington) seems to have gone in for the production of these flowers and literally acres of cold frames are now in use. One concern alone is forcing over 900,000 iris bulbs (of their own production) and I think it is no exaggeration to estimate the total quantity of iris bulbs being grown in frames at 2,500,000 to 3,000,000. There are, of course, several times this number in the fields. A large proportion of these bulbs were cold-stored (45-50° F.) for about five weeks last summer, as a result of which flowering has been advanced from several weeks to over a month. (This process of flower acceleration in iris as well as narcissus is of course an application of the investigational work of our Division on the influence of temperature on flower bud development and on the preservation of bulbs, in storage). The emphasis in the iris flower industry is now definitely on the late winter season, though flower cutting from field grown bulbs will continue. As a result of this advancement of the flower season of iris, greater protection against damage by cold is necessary than when the season did not bein until late spring. Lanters and oil burners have been the principal sources of heat; glass, cloth and reed covers are used for protection. One grower alone furnished a market for 200 dozen lanterns, and has kept a force of 20 to 25 persons employed most of the winter handling his flower production and packing.

"Prices have been low (35-40 cents a dozen for iris now, and 15 cents for narcissus) but where growers are producing their own bulbs, and salvaging them after forcing, they can undoubtedly show a profit even at these prices. Earlier in the winter, the returns were much higher.

"This intensive iris production with close planting, repeated use of same soil and site, and high production requirements for profit, will undoubtedly raise new pathological problems to replace the one of narcissus basal rot control, now practically solved. There is much interest among the growers in more effective mosaic control, and especially in means of reducing the high cost of field roguing, which all the successful growers now practice. Wedgewood, the choicest variety now commercially forced here, is at present in the worst condition as regards mosaic infection, and is a poor performer when diseased.

"Winter forcing of cold-storaged narcissus in cold frames is now a standardized business in this region, but it is generally considered that the special advantage of this district is in iris production, since the iris requires too long to flower under greenhouse culture in the North

to be profitable. Greenhouse forcing of narcissus, however, is easily holding its own, at least for mid-winter forcing, because with cold-storaged bulbs the crop can be taken in full within four to five weeks of first bringing the flats indoors, as compared with the minimum of six weeks, much later in the season, formerly considered necessary.

"The influence of natural temperatures, especially following planting, has been strikingly shown in the precocious development of certain varieties of field-grown narcissus this year. Even without cold storage treatment, field grown King Alfred were in full bloom the first week in February, and except for fully open flowers, did not appear to be injured by the temperature of 15-20° F. which prevailed on two nights. However, not only the normally early varieties King Alfred, Golden Spur, and Minister Talma flowered early this year, but some normally late varieties of the Barri and Incomparabilis types, e. g. Brilla, Blackwell, Titan, are in flower or full bud. The flowering and foliage of all Polyanthus types, especially Soleil d'Or, were exceptionally fine this year, as a result of the mild weather of January."

F. P. McWhorter, Corvallis, Oregon.

"The weather has been not only unusual but atrocious," he writes on January 25, the italics being his, too. The word atrocious means 'full of cruelty,' he explains, "and the bulb farmers agree with this definition since the zero weather which came suddenly just before the Christmas work days caused some of our best growers to lose all their iris. Strange to record, the damage was greatest in Southern Oregon, especially in the Grants Pass region. The bulbs froze and disintegrated with a soft rot.

"In the Willamette Valley and at our own bulb plot there seems to have been little damage, although the tops were killed down to the ground. The top injury may, of course, affect yields. This freeze extended to southern California. Eucalyptus trees up to two feet in diameter were killed and the damage to tender ornamentals in the Oakland region was very serious.

"It was the coldest low in 52 years! The calla plantings at Brookings were out to the ground. At our suggestion, steps were taken to cultivate the debris away from the plants so that the new growth might be less exposed to vegetating leaf spot fungi. The loss has been greatest in iris. Two important iris stocks were destroyed by fires during storage and now the fine plantings at Eugene and Grants Pass are gone..."

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

Edwin Smith, Wenatchee, Wash.

"The past week has been pretty well occupied in the preparation for and departure of the second winter transportation test which left Wenatchee on the evening of February 3d in charge of Mr. Mallison," he writes under date of February 6. "Accompanying the test were Messrs. Mallison, Gorman and Hukill of the Division, Mr. Ralph Killingsted of the Western Fruit Express, and Mr. C. Lindley of the Pacific Fruit Express. Significant features of the test are stated as follows:

"1. Standard apple load under inside control.
"2. Standard apple load under inside control, using Hukill's bimetalic thermostat indicators.
"3. Standard apple load with about six inches of wet sawdust on the floor of the body and bunkers, carrying about four tons of water. The car had floor racks lifted, 2x4" bed pieces placed on edge, wet material distributed, and floor racks resting on top of material and bed pieces, allowing about two to three inches air space beneath floor racks to bunkers.
"4. Standard apple load with wet sawdust beneath floor racks, eight bags wet sawdust in each bunker and eight bags between bracing at doorway, being a repetition of the Medford wet sawdust car with slight variations. The material used in the Wenatchee car would not carry the moisture content of that in the Medford car so that less water was actually carried. Actual determinations have not yet been made but it will be between 1,000 and 1,500 pounds of water.
"5. Standard apple load under C.P.S., with two of Mr. Gorman's wind-motivated fans over bracing near the ceiling at doorway.
"6. Standard apple load under C.P.S.

"Mr. Hukill had thermocouples in one inside control car to study inside car wall temperatures and also to study variations of fruit temperatures as influenced by conductivity of heat through the metal armor of standard resistance thermometer 'bulb' when inserted in a fruit for the regular reading of 'fruit temperatures.' (It has been thought that the fruit thus punctured is more quickly and radically influenced by surrounding air temperatures than adjoining fruits not influenced by heat transfer through a metal conductor such as the armor.)

"An inside control car also carried instruments for inside control supplied by the Du-Well Steel Products Company, the American Recording Instrument Company, and Leeds and Northrup.

"Another feature carried in one of the inside control cars is an ordinary mercurial fruit thermometer mounted in a 3/4-inch wooden casing about 15 inches long. A 3 4-inch hole was bored through the door framing

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

Edwin Smith (continued)

near the bottom layer of fruit and the instrument is inserted from outside the car. The small fruit thermometer is mounted in rubber insulation, does not touch its wooden casing, and is wholly inside the car when inserted. The extension of the wooden casing completely fills the hole in the door framing and extends far enough outside to be handily withdrawn for reading temperatures. The wooden casing gives some protection against quick change of the mercury when being with drawn to colder outside temperatures. Three thermometers were thus mounted by a local cabinet maker at a cost of less than $2.00 each, after the design of Mr. Mallison, and upon the suggestion of one of the local officials of the Western Fruit Express Company that something of this nature be carried out."

"The weather has continued cold," he writes February 14. "Wenatchee's minimum temperature during the week was -15° and on the morning of Feb.13th it was still as low as 4° below. A light snowfall occurred on Feb. 9th, leaving the coverage about the same."

FRUIT AND NUT PRODUCTION

Geo. F. Waldo, Corvallis, Ore.

"Activities during the past week have been confined entirely to the study of fruit bud differentiation in rubus material," he writes on February 11. "The last collection was made just prior to another freeze, down to 11° F., on February 8. The temperature moderated February 10, followed by snow and rain. Examination of strawberry and raspberry buds prior to the freeze showed indications of fruit bud differentiation. Consequently there is a possibility of considerable more damage to the small fruit industry of the Pacific Northwest. We are unable to determine to any degree of accuracy the amount of damage which occurred during the December freeze, but estimates vary from 40 to 75 per cent in strawberries.

"At the present time there is a big demand for strawberry plants, but no one seems certain as to the advisability of setting out the injured plants. In many cases the roots are entirely frozen off of young plants, but the usual condition is that only the cortex of the roots are killed, leaving the vascular cylinder still in a condition which will allow for the conduction of water and plant nutrients. Many plants so injured prior to the last freeze were sending out new branch roots and also putting out some new leaves from the crowns.

"In cases where the developing flower cluster which differentiated during the autumn was killed there appears to be more differentiation taking place near the base of the killed inflorescence. In the Loganberry and Oregon Evergreen blackberry, this condition was found quite clearly.

FRUIT AND NUT PRODUCTION

C. F. Kinman, Sacramento, Calif.

"Although it is still cold and the soil temperature is low," he reports February 11, "a few new root extensions were made by trees that I have under observation at Chico. These roots appear to be starting somewhat farther in advance of the blooms than in former years....In the Placer County and Sacramento River districts I have noted considerable discoloration at the base of some of the pear buds. In some locations a considerable percentage of the buds will probably not set fruit....Several feet of the soil in the orchard sections around here is moist although our winter rainfall is less than half of the normal up to date."

Atherton C. Gossard, Spring Hill, Ala.

"I have a suggestion to pass along to those who may be doing any pruning on large trees in a climate where painting of pruning wounds is necessary," he writes February 4. "For cuts made with a pole saw or pruning poles, or any cuts which are difficult to reach with an ordinary paint brush, we use a ten cent shoe dauber lashed to a bamboo pole. We have three or four of these on poles of different lengths and find the long-handled brushes with the bristles on the side convenient for painting cuts beyond arm's length. They are also quite inexpensive."

C. E. Schuster, Corvallis, Ore.

Writing on February 4, he says: "One interesting thing being discovered in the filbert survey work which was not generally known is the wide extent of winter injury incurred apparently during the freeze in January, 1930. Not many trees were killed but many of the orchards on fairly low level laid have more or less damage to the bark on the south and southwest sides. This usually is in very narrow strips and one to three inches wide running up and down the trunk and generally at that point expressed by the growers as the 'one and two o'clock' section of the trunk. It is generally considered that filbert trees are practically immune to winter conditions, but with this showing up there apparently are periods or stages of development when winter injury will occur."

POTATO INVESTIGATIONS

W. C. Edmundson writes from Greeley, Colo. on February 14 that they have been having more cold weather. "Wednesday, the Temperature dropped to 25° below zero," he reports; "Thursday it was 14 below and Friday 32 below. Saturday the weather moderated somewhat, the temperature being but 13 below zero. Some sections of the mountain area were much colder."

FRUIT DISEASES

Lee M. Hutchins, Fort Valley, Ga.

"The most interesting subject to report," he writes February 13, "is the damage to peach buds on account of the heavy freeze on the morning of February 9. The record at the local Weather Bureau station showed a low of 11.90. The following summary shows killing of peach buds by this freeze, calculated in percentages killed:

	May-flower	Uneeda	Early Rose	Carman	Hiley	Ga. Belle	Elberta	J.E. Hale
Fort Valley,Ga.	16%	6.0	21.0	12.0	35.0	....	18.0	....
Thomaston "	.....	63.0	53.6	50.0	88.5	....	61.0	67.0
Gay. Ga.	.....	61.5	.....	92.0	.....	79.0	46.0	
Cornelia, Ga.	.....	70.0	70.0	75.0				
Adaisville,Ga.	.....	63.0	....					
Sales Creek,Tenn	.....	89.0	....					
Harriman, Tenn.	.....	100.0	....					

"On the morning of February 10, we had another sharp freeze, but the temperature did not drop below 22, and on the morning of the 11th, we had a slight freeze accompanied by heavy sleet. Counts made respectively on the 10th and 11th showed no appreciable increase in killing over the count made on the 9th. It would appear that practically all the buds that were susceptible to damage by these freezing temperatures were caught by the first severe freeze, on the morning of the 9th."

Leslie Pierce, Vincennes, Ind.

"A cold wave struck the Vincennes section the afternoon of February 7th," says his report for the week ending February 11. "From a minimum of 43° just before noon, the temperature fell to 2° above zero during the night. The lowest temperature recorded during the week, 2° below zero, occurred the night of February 8. The total precipitation for the week, rain and melted snow, measured 0.96 inch.

"During this period of low temperatures the prospect for a crop of peaches in this and adjoining sections was considerably reduced. An examination of 203 Elberta buds from the Purdue-Vincennes orchard showed a mortality of 90.2 per cent. The damage in the N. Y. Yates orchard at Decker was 80 per cent. The damage in the Bert Yates orchard at Oaktown is reported as being 73 per cent. An examination of 223 Elberta buds from the University Orchard at Olney, Ill. showed a mortality of 75.8 per cent. Mr. Earl Byers reports a damage of 92.3 per cent to the Elberta buds in the Dixie orchard at Vincennes. A temperature of 3° below zero and 90 per cent of the peach buds killed is reported from Henderson, Ky."

FRUIT DISEASES

Paul W. Miller, Corvallis, Ore.

"Attempts to isolate the walnut blight pathogene from natural soil collected from under badly infected walnut trees were negative," he reports January 28. "Attempts to isolate Ps. juglandis from natural soil which had been inoculated with a water suspension of the pathogen 72 days prior to the date of isolation attempts were likewise negative. The walnut blight pathogene was isolated, however, from inoculated sterile soil to which had been added pure water suspensions of Ps. juglandis 72 days before the period of isolation attempts. Judging from the results of these studies, Ps. juglandis can live in sterile soil for at least 72 days. In natural soil where it had to compete with a normal soil flora, the walnut blight pathogene seemingly dies out in a relatively short time. The fact that Ps. juglandis has never been isolated as yet from natural soil collected from under badly infected walnut trees would seem to indicate that under natural conditions the blight pathogene does not over winter in the soil.

Ps. juglandis was isolated during the week from a pure water suspension of the pathogene which has been kept at room temperature for 8,252 hours. It would appear from the results of this study that the pathogene causing blight can live for relatively long periods of time with little or no food providing the organism is kept wet and there are no competitive flora present."

John C. Dunegan, Fayetteville, Ark.

"The mild weather of the past few weeks came to an abrupt end on February 7, when the temperature fell rapidly during the day and night and a temperature of 9 degrees F. below zero was recorded at the weather station on the University Farm. Temperatures close to zero continued the next day, but were somewhat higher on the 9th. More snow is predicted for today," he writes on February 10, "and the temperature may drop again. "Considerable apprehension is felt for the safety of the peach crop in Northwest Arkansas, as the buds had started to develop slightly. I talked with one man at Springdale on Wednesday who stated that he thawed out some limbs from his trees and found a very considerable percentage of live buds. Definite information is lacking, however, and a decided rise in temperature must occur before bud counts can be considered accurate. No information is available concerning the situation in the main peach producing area of Southwest Arkansas. The apple growers do not feel alarmed about the apple crop."

J. R. Cole, U.S.Pecan Disease Field Laboratory, Shreveport, La.

"We have had genuine winter weather here this week," he reported on February 11, "with temperatures dropping to 9°, and the ground covered with sleet or snow most of the time. It is too early to tell now just what damage has been done to fruit trees and other plants in this vicinity."

M. A. Smith, Ozark Fruit Disease Laboratory

"We have been in the midst of a severe cold wave here since Monday," he writes February 11. "Tuesday night the temperature reached a minimum of 13 below zero. Wednesday night it was 10 below. The peach crop has no doubt been severely injured. Growers in the Monett area report that so far strawberries have come through in excellent condition. A light snow which fell there on Monday afforded much protection. From the information which we now have it does not appear that the severe cold has injured apples."

TRUCK CROP DISEASES

Wm. D. Moore, Charleston, S.C.

"We have experienced this week the coldest weather for this section in five years," he reported on February 11. "The temperature reach a low of 23° F. at the Truck Experiment Station on two days and ranged from 10-15 below normal on all other days. During this period we had 4.1 inches of rainfall, bringing the total for the year to date about 4 inches above normal. Some crops, such as heading lettuce and very young cabbage, were damaged somewhat by the cold, but for the most part the losses were small. Potato planting is well under way, but with prospects of only 25 per cent of a normal crop being planted. Other crops, such as beans and tomatoes, will in all probability suffer similar cuts."

On February 18 he wrote: "We had had rain on three days this week with a total precipitation of one inch. The heavy rains of last week, however, had flooded the fields, consequently these last showers only aggravated the already bad field conditions. Practically all potato planting has been temporarily suspended on account of the water. Temperatures have been about normal....Due to the excessive moisture and the relatively low temperatures, we are getting a fairly heavy outbreak of foliage diseases, such as Alternaria and Peronospora on cabbage and turnips. With market prices at such a low point, it is not likely that any remedial measures will be taken so far as these troubles are concerned."

CROP PHYSIOLOGY

Freeze in Ala. Writing to Doctor Auchter from Fairhope, Ala. on Feb. 10, Dr. Walter T. Swingle says: "We have just gone through a severe freeze. At 10 on the evening of the 8th, the temperature dropped to 22, continuing to drop until it reached 15.5 yesterday morning. There was a strong northwest wind blowing about 25 miles an hour the afternoon of the 8th, continuing through the night until about 5 a.m. on the 9th, when the wind fell almost to a calm. After sunrise on the 9th the wind sprang up again from the north, verring to the northeast. Clear sky with bright moonlight all night; clear weather, bright sunlight all morning the 9th. The leaves thawed out slowly since it remained cold for several hours after sunrise. The temperature was still below 32 at 10 a.m. yesterday morning. Fortunately our own planting of new Satsuma strains at Silverhill, Ala., and a number of others made by our collaborators, were given frost protection which worked very well indeed...."

ADMINISTRATIVE NOTES

Purchases at end of Year. Of course, the issuance of the customary warning about the difficulty of getting purchase orders approved toward the end of the year, is apt to be met with the question: "Purchases? With what?" On the assumption that some project leaders may have funds now and later, Mr. Schoenhals is again calling attention to the necessity of restricting as far as practicable the purchase of supplies and materials near the close of the fiscal year--when such purchases are not only difficult to rush through, but may give the impression that we are merely trying to spend the money to keep it from reverting to the Treasury. Part 71 of the Fiscal Regulations covers that: "All purchases at or near the close of the fiscal year for the sole purpose of expending surplus funds shall not be made."

We must be in a position to defend beyond question any large orders placed near the end of the fiscal year--to show that they were absolutely necessary for the proper handling of our work. In fact, after May 15, all requests for large purchases will require statements showing absolute necessity before the orders can be approved; and withdrawals of stock from the Bureau's supply room will be approved only to meet the needs of an office for the rest of the fiscal year.

"To cooperate with the business office in the matter of handling the vast amount of detail work," says Mr. Schoenhals in a memorandum regarding purchases, just issued, "it will be appreciated if very early consideration is given to your requirements for equipment, materials, and supplies for the remainder of the current fiscal year, and furnish lists of your needs.

List of Equipment

1. This list should be divided in two parts, indicating in group "A" such as you authorize us to purchase immediately, and in "B" actual purchases to be deferred until specific authority is later given us.

With this information we can take immediate action to secure bids without the necessity of unduly hurrying the various offices concerned. Purchase of articles in group "A" will be made immediately upon acceptance of bids. Acceptances of bids for articles in group "B" will be held until receipt of information from you to make the purchase. It is important, however, that notice to proceed with such purchases be received on or before May 1.

2. List of equipment needed but for which it is impossible to foresee funds being available this fiscal year, and which will probably be purchased in the first part of the next fiscal year if it develops that no funds are available this year.

ADMINISTRATIVE NOTES (continued)

Requisitions for Supplies

3. We will appreciate the quarterly field station requisitions for supplies normally scheduled to be mailed to us on May 1 and June 1, being forwarded on April 1, and suggest that they provide for sufficient supplies to last until the next scheduled requisition. This is with a view to avoiding the congestion which would occur in our own property section and the Bureau Property Room, if they arrive on the scheduled time, resulting in many instances in delaying deliveries until after July 1.

4. List of supplies of a specialized nature such as fertilizers in large quantities, seeds, spraying materials, etc. where the expense will run to $25.00 or more. By combining orders and calling for bids on such combinations, it is frequently possible to purchase at a large saving.

"In view of the conditions now prevailing with respect to practicing economies throughout the division, it is not our intention to imply that project leaders purchase supplies and equipment which may be deferred, but rather that advantage be taken of the time between now and the opening of spring and summer field work to compare needs with the available funds for such purchases and to notify the business office at the very earliest date practicable in order that ample time can be taken to obtain proper competition on the articles needed and, if possible, combine the bids for similar articles, thereby often obtaining more advantageous prices.

"We should point out that -

It requires from one month to six weeks to obtain bids and have them acted upon.

Requests for bids submitted to this office after May 1, in order to be favorably acted upon, will require a special explanation to the Bureau administrative officials showing the necessity for the purchase during the present fiscal year, as well as the reason why the need was not previously foreseen.

"As you are well aware, there is a large amount of work involved in the securing of bids, and since it is desired to avoid congestion in the office as well as to facilitate prompt ordering when funds are available, and also to meet the requirements of the Bureau regulations on the subject, your cooperation in making known your needs promptly will be greatly appreciated."

While this memorandum was addressed to heads of projects, it is one which should receive the prompt and careful attention of all employees who may have authority for making purchases.

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The OFFICE OF
HORTICULTURAL CROPS AND DISEASES
SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF HORTICULTURAL CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R

The official organ of the Division of Horticultural Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.

John A. Ferrall, Editor

This NEWS LETTER is for distribution only to employees of the Division, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Horticultural Crops and Diseases. The reports of field workers, of course, represent their personal opinions and are not necessarily the official and final word on the subjects which are discussed.

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Fruit and Nut Production.

A man and his wife, visiting Washington for the Inauguration, were sitting in their hotel lobby, partly concealed by palms, when a young couple came along and sat down quite near them, entirely oblivious of their presence. The young man immediately broke into a passionate proposal of marriage. The elderly wife was quite embarrassed and sought some way to warn the young man of their presence. "Do something," she whispered to her husband. "Make a noise to show we are here--whistle and warn him." The husband was entirely indifferent. "Why should I?" he protested, coldly. "Nobody whistled and warned me!"

Well, fruit growers who continue to allow inferior and off-type trees to take up valuable space in their orchards, can't say that we have not warned them--A.D. Shamel and his associations, in particular, have been doing a lot of whistling--and not in the dark, either. Their latest tune is put out as Farmers' Bulletin No. 1696, "Deciduous-Fruit Improvement through Tree-Performance Records." authored by A. D. Shamel and C. S. Pomeroy.

"Successful commercial production of deciduous fruits is based upon the culture of established, profitable varieties," says the foreword to this bulletin. "Systematic individual tree studies of many orchards, particularly those where the trees have just come into bearing, may reveal inferior or off-type trees that reduce profits. These undesirable trees may result from unintentional propagation of limb variations, from the failure of the buds inserted in the nursery rootstocks, or from accidental mixture of strains or varieties in the nursery. Such trees can be located and if necessary eliminated by replanting or top-working.

"The individual-tree performance records of citrus orchards have been outstandingly useful, both commercially and scientifically. The records have been widely adopted by citrus growers of the Southwest as one of the regular orchard practices. It is believed that a somewhat similar method of individual tree study will prove equally valuable in deciduous fruit orchards."

The individual-tree performance records, of course, are especially valuable in permitting the selecting of superior trees as sources of bud wood for propagation, in finding valuable limb variations that may give rise to improved strains or varieties, in locating undesirable limb variations to be removed by pruning, in studying the results of orchard practices or experimental tests, and in the systematic care of individual trees.

"In deciduous fruit orchards such records are most important as a means for discovering the relations of cultural practices, inherent tree characteristics, and environmental influences to profitable orchard production. It is believed that they will help materially in revealing the causes of failure to obtain satisfactory quantity and commercial quality of fruit and in indicating the best methods of improving yields."

The Press Service of the department, in one of its splendid popular news releases, gives an excellent summing up of the work covered by this new bulletin.

"Adopting the method long used by livestock breeders and more recently in citrus orchards," it says, "growers of apples, pears, peaches and other deciduous fruits are now finding it profitable to keep records of individual trees to eliminate the unprofitable ones and to find improved strains or varieties.

"Records of individual tree performance are especially valuable in orchards that have just come into bearing, as they enable growers to cull out inferior or off-type trees that do not pay. Sometimes, too, records reveal limb variations from which improved strains or varieties may arise.

"Another important value of the individual records is that they provide a good check on cultural methods, fertilizer practice, and other orchard work. The bulletin contains samples of forms suitable for keeping individual tree records and suggests plans for setting up such a system of records.

Fruit growers and others interested may obtain Farmers' Bulletin 1696-F from the Superintendent of Documents, Government Printing Office, Washington, D. C. at 5 cents a copy. Stamps will not be accepted, however.

FRUIT AND NUT PRODUCTION

Elmer Snyder, Fresno, Calif.

"The distribution of grape material was practically completed during the past week," he writes on February 18. "The major portion of these distributions was sent from the U. S. Experiment Vineyard at Oakville, Calif. by Mr. Husmann. A few special lots were sent from the U.S. Experiment Vineyard, Fresno, Calif. While not very much experimental data can be obtained from these distributions, they do form a point of contact between the Department's investigations and the work of the Experiment Stations in various States, and also with private growers who are interested in trying promising varieties in a commercial way. In the case of the distribution of stocks it affords a more extensive trial and demonstration of their value than is possible in our own experiment vineyards. The distribution this season could be grouped under the following: Vinifera varieties and phylloxer-resistant rootstocks for trial in the Southeastern States, rootstocks for trial at Experiment Stations, seedless vinifera varieties for breeding use at several experiment stations, vinifera varieties for private individuals, not obtainable from commercial sources, and stocks for nematode-resistance tests....

"Following out the project of testing grape varieties introduced from foreign sources through the Division of Foreign Plant Introduction, 50 additional variations were planted during the past week. These varieties were introduced from Corsica, India, Morocco, and Tunis. The majority of these vines were grown in the Fresno Experiment Vineyard nursery during the past season from cuttings obtained last spring. One lot of grafted vines consisting of 12 varieties was obtained from Morocco this year."

Atherton G. Gossard, Spring Hill, Ala.

Writing on February 18, he reports that the week had been spent in the orchards. "Pruning was completed in the Horticulture-Pathology demonstration block at Seven Hills on Tuesday, and in the leaf-scorch experiment on the R. V. Taylor place on Thursday. Friday, some old and rotted cuts, made before we started work in these orchards, were cleaned out and painted and some of the brush weighed to give an indication of the amount of pruning. As none of the trees had been pruned before and were thick and in weak condition, the pruning was fairly heavy---250-300 pounds removal would be representative in the demonstration block, and 175 pounds in the leaf scorch experiment....Orange trees and other trees and plants in a growing or near growing condition at the time of last week's freezes look pretty 'sick'. Even trees which had some protection from heaters are turning yellow and look as though they will lose all their leaves."

FRUIT AND NUT PRODUCTION

George P. Hoffman, Meridian, Miss.

"The truck crop and berry growers seems very active," he writes on February 11. "A packing shed and cold storage plant are being sought. Green corn and white potatoes are being advocated as possible and promising cash crops for this season's planting. An arrangement has been made through the Agricultural Agent of the Illinois Central Railroad (Mr. R. O. Lawhan) whereby farmers might enter into a contract with a Minnesota grower to obtain seed potatoes in exchange of certified seed potatoes for harvested potatoes of the same variety (Red Triumph)--growers topay freight charges at about 45¢ per CWT and to return at harvest 1-1/2 bushels of U. S. No. 1s for each bushel obtained from the Minnesota growers, the latter to pay freight on the return shipment....

"It would seem that root crops do well here and carrots appear to be of very high quality and rather widely grown. There is evidence of sweet potatoes having been more extensively grown in the past than at this time--one storage house in the vicinity of Marion not being used."

H. L. Crane, Albany, Ga.

Report for week ending February 4: "The cover crops were planted on time, about September 20 to October 15, and under very good conditions. Rather frequent rains provided ample moisture for the rapid germination of the seeds and the young seedlings got off to a good start. In a short time, however, the Monatha vetch began to turn red and the Austrian winter peas yellow. This continued until, in many areas, all of the cover crop plants died and the land was left bare. In other areas the plants remained discolored until in early January, when they began to grow and at this time have produced an excellent cover. It was first thought that this condition was due to nema injury, but the more plausible explanation seems to be nitrogen starvation, since recovery followed top dressing with nitrogen carriers. Furthermore, a close relation was found between soil nitrates and cover crop development....In the past few weeks a new trouble has developed, that is, some disease has attacked Monatha vetch which is causing very rapid deterioration of the covers in certain orchards. Judging from the appearance of the plants and the way the disease works, it is the same thing which killed the cover crops in the early spring of 1932."

"Relation of Leaf Area and Position to Quality of Fruit and Bud Differentiation in Apples," has been issued as Technical Bulletin 338 in the department's series. It was prepared by Doctor Haller and Doctor Magness. Those interested in the subject will be pleased with the list of 42 papers at the end of the bulletin. It is sold by the Superintendent of Documents, Washington, D.C. for 5 cents a copy.

FRUIT AND NUT PRODUCTION

C. E. Schuster, Corvallis, Ore.

"Winter killing is now beginning to make itself evident," says his report of February 18. "In the Roseburg territory there is some walnut nursery stock that has all the buds killed--both secondary and primary buds. The bark and other tissues show very little damage. These are the Franquette variety of Persian walnuts. Black walnut stock of any age showed no damage at all. Of the hybrid stocks being grown for various reasons, considerable damage was evident in the inner bark.

"In the Roseburg territory peaches, berries and a wide range of nursery and ornamental material is badly hurt. The Coos Bay myrtle growing along the Umpqua river showed considerable damage on trees that are 70 years old. In the Willamette valley sweet cherries have suffered considerable damage. In some places peaches are hurt. One to two-year-old peach orchards are reported dead. In some cases the catkins on Franquette walnuts are frozen, with slight discolorations at other points. The filbert has suffered no damage, but the blooming season is being delayed to a great extent. The grain crops are cleaned out. After the first freeze there was some Hungarian vetch left, but farmers say that the last freeze finished most of that. Of course, this does not mean that it is destroyed 100 per cent, but 95 per cent of it will need to be reseeded. We have found one cover crop that was not damaged or killed, and that is crimson clover, a hardy strain brought in from Michigan some two or three years ago. At the time I saw the clover it apparently had suffered no damage. All other cover crops except rye were destroyed, and practically no one used rye."

TRUCK CROP DISEASES

Wm. D. Moore, Charleston, S. C.

"All cabbage fields throughout this area show considerable damage from Peronospora infection," he writes on February 25, "but this will probably not affect the final yield materially. The outer leaves of practically all plants show some spots and many of the fields are taking on a yellow cast as a result. Alternaria leaf spot has become quite serious in some fields of turnips and mustard.

"The magnesium deficiency trouble has begun to show up definitely on the young cabbage and will probably cause heavy losses on this crop during the next two months. On one field here at the station, this trouble has been entirely checked within 10 days by the application of 100 pounds per acre of sulphate-of-potash-magnesium. The manager of the American Fruit Growers' farm reports the finest cabbage crop in his experience at this time as a result of an application of basic slag to his lands before planting and the addition of magnesium sulphate to his standard fertilizers. This is a marked contrast to other farms in his immediate section."

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

C. O. Bratley, New York Market Report, February 20.

"Considerable time during the past two weeks has been spent in obtaining pictures of operations on the New York market. Through the courtesy of the railroads maintaining piers for the fruit and vegetable displays, many pictures illustrating the methods of handling produce for display and sale were obtained. Pictures of the two farmer's markets in the city are yet to be taken.

"During the last year and particularly during the last month, Florida citrus has been shipped more and more by boat. The higher freight rates by rail are held responsible. Of 284 cars of oranges arrving two weeks ago, 212 came by boat; of 300 last week, 227 were by boat. In two boat shipments examined lately, the fruit was in good condition. Along the same general line is the attempt to truck fresh strawberries from Florida to New York. It is difficult to get accurate information regarding the truck shipments. The first truckload arrived about two weeks ago but because of sub-freezing weather between Baltimore and New York City, the load was partly frozen. Another truck arrived yesterday, and two more today. The strawberries from these were said to be quite mouldy.

"An unusual situation in potato transportation occurred three weeks ago. A ship loaded with bagged Maine potatoes sank in Long Island Sound. After three days the boat was raised, the potatoes removed, placed in storage and sold to jobbers. We were asked our opinion as to the changes in eating or keeping quality brought on by such treatment. Having had no experience with brined potatoes, we were unable to give any information. At the present time potatoes from the cargo are showing from 3 to 5 per cent Bacterial Soft Rots. Only potatoes next to the side of the bag are affected. The center of the infection seemed to be where the weave of the bag was impressed into the skin of the potato. Since the bags of potatoes were handled several times while still wet, it seems likely that excessive bruising occurred on the exposed tubers. Potatoes from the center of the bags were not injured though they may have a slightly darker color than usual.

"Russeting of Florida string-beans has been brought to our attention. Freezing injury on a number of fruits and vegetables has been a problem since the cold wave two weeks ago. The question of whether slightly frozen apples were more subject to decay with Alternaria Rot has arisen. An examination of a large shipment of Chilean nectarines revealed 5 per cent affected with Peach Leaf Curl which was exhibited as low red warty excrescencies on the fruit. The season's third large shipment of honeydew melons from Chile was free from decay but contained mostly immature fruit which failed to ripen."

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

Edwin Smith, Wenatchee, Wash.

"Dr. Gerhardt and Mr. Ezell completed determining starch differentiation in Winter Banana affected with Bitter Pit in various degrees of intensity depending upon maturity at the time of storage," he writes on February 27. "They are now finding that the 1933 Comice are beginning to 'go dead.' (He had written a week earlier that the Bosc went 'dead' in storage about the middle of January--and that acetaldehyde determinations were substantiating last year's observations with Comice--that quantities of acetaldehyde increase abnormally as the pear comes into the season where normal ripening is no longer possible.) Mr. Ryall, accompanied by Mr. Newcomer, was in Wenatchee February 21-22. Plans were worked out for further washing experiments for lead residue removal, using fruit previously washed with alkalies for arsenic removal. On account of the availability of operating washers the work will be done in Wenatchee...

"The F.D.I. sent industrial laboratories in Yakima and Wenatchee their short method for analysis and requested that all apple shipments after Feb. 27 be sampled and analysed for lead residue. All carloads carrying a lead residue in excess of .025 grains of lead oxide per pound of fruit will be 'reported out' to officials of the F.D.I. in terminal markets for their consideration. The laboratories have not been able to secure equipment and perfect their technique and run analyses by this date and it will probably take another week or so before this will be possible.

"At the meeting of the Horticultural Club on February 20, Mr. W.A. Luce led the discussion on the costs of production on apples for 1933. It was generally accepted that 1932 costs were between 60 and 70 cents a box on well managed orchards of good production. To meet the possible necessity of producing during 1933 for 50 cents a box the following cuts in expenditures were considered: (a) not paying taxes or water assessments; (b) elimination of fertilizer; (c) reduction of labor and material costs in spraying; and (d) no expenses for repairs, etc. more than actually necessary to keep water on the orchards, keep the spraying machinery in running order and haul and pack the fruit....

"A week of fairly bright weather, with snow off the orchards in the vicinity of Wenatchee and with temperatures ranging between 25 and 55 degrees , has witnessed activity in the orchards with much brush on the ground and numerous tree (fillers, etc.) cut down in some districts. At up river points snow has not disappeared to such a degree and advancement of winter work is not so noticeable.

"No taxes are to be levied against apples in storage on March first this year."

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

W. T. Pentzer, Fresno, Calif.

"For the past month or so the activities of Asbury and myself have consisted chiefly of laboratory work in connection with respiration, storage and maturity studies of grapes," he reported on February 14. "We attended a meeting early in January called by the County Horticultural Commissioner and State Department of Agriculture to consider grape maturity standards for the coming two years. The few growers present were in favor of raising the present Balling requirement on Thompson and Malaga from 17 degrees to 18 degrees, but they were not in favor as yet of adopting a Balling-acid ratio standard worked out by the Universary of California.

"The reaction of the shippers in this district and others is that of trying the Balling-acid ratio Standard experimentally for two more seasons and if it proves workable, consider it at the next session of the legislature. The plan is to equip packing houses next season with acid titrating equipment and acquaint the shipper with the use of the standard. We have offered the State Department of Agriculture our assistance in showing the shipper how to make these tests. The general opinion in the grape districts for a maturity standard on Thompson and Malaga is to leave the Imperial and Coachella Valley standard at 17 degrees Balling, and make the standard for the rest of the State 18 degrees. This is the same as the 1929 standard.

"Inspection was made of our frozen fruits several days ago and the most promising material proved to be nectarines, Mission figs and Muscat of Alexandria grapes. The canning varieties of cling peaches were unsuitable, being too tough and tasteless when frozen, and other varieties of figs, grapes and prunes lacked an appealing flavor when frozen. A cutting of our frozen material, together with some of Diehl's, will be made before members of the California Canners' League in San Francisco on February 21.

"Rainfall so far this season has been less than normal, amounting to 3.96 inches, but the snowfall in the mountains has been fairly heavy, assuring a fair supply of ditch water next season if the snow does not melt too soon. We have had a few warm days and the filaria and other green feed plants are coming along fast, assuring the sheep and cattle men on the 'west side' of the Valley feed for their stock. Japanese quince has been blooming for some time and early almonds and plums will soon be in bloom."

VEGETABLE PRODUCTION

Doctor Victor R. Boswell's paper on "Commercial Cabbage Culture," has been issued as Department Circular No. 252, for sale by the Superintendent of Documents, Washington, D. C. at 10 cents a copy. It contains 58 pages, with 21 text figures, and discusses not only cultural methods but insect and disease control.

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

C. W. Mann, Pomona, Calif.

"Dr. Harvey and Mr. Rygg are devoting their entire time to the physiological and chemical studies of the rind of mature Washington Navel and Valencia oranges," he wrote on February 17. "The Washington Navel oranges used in this work are being obtained from the same localities as the Valencias. The Valencias held in storage in the experimental rooms in Pomona extended the work of that variety beyond the beginning of the Navel orange season, and the over-lapping of the samples resulted in a considerable increase in pressure of the work in the laboratory.

"Early picks of grapefruit in the Coachella Valley for the storage experiments were obtained by Mr. Gray at Thermal last week. It has been planned to make two later picks from the same groves about 30 days apart, including lots picked just preceding and following the blooming period. The low temperature reported in the Coachella Valley on two night recently may have frozen some of the fruit which was to be used in the storage experiments. No definite reports of the extent of the damage have been received yet, but temperatures were reported to have reached 21° at Coachella on February 10, about the lowest experienced in a number of years.

"Conferences between the growers' representatives and vice-presidents of the railroads of the Southwest were held in Los Angeles and Sacramento recently in an effort to bring about a reduction in transportation charges on fruit and vegetables during the present period of unprofitable market prices. The growers and shippers have contended that the mutual interests of the producers and transportation lines will be served through the voluntary lowering of the present high transportation costs. At these meetings the subject of competitive water transportation to New York and other ports on the Atlantic Coast was not overlooked. The question of establishing a temporary or emergency freight rate on citrus fruits is still being considered, or at least no definite decision has been announced by the railroads."

H. C. Diehl, Seattle, Wash.

"There is evidence accumulating that the two 'cold spells' of the winter have seriously damaged the small fruits, but to what extent is not yet evident," he writes from the U. S. Frozen Pack Laboratory on February 14.

"Ezell paid us a visit late in the week," he adds, "and we went over the manuscript of the bulletin dealing with canned Bartlett pears. We also made a trip to Olympia for a conference with certain prominent pear canners regarding the results of our experiments, and obtained valuable suggestions."

FRUIT DISEASES

Howard E. Parson, Pecan Disease Field Laboratory, Spring Hill, Ala.

This interesting report, sent in February 18, reached us just a day too late for the March 1 issue, as we have to send material in about a week in advance of issue to provide for mimeographing, collating, stapling, etc.

"A freeze came on the night of February 8. Near the Gulf at Fowl River, Ala. and at Mobile, the lowest temperature was 17; at Spring Hill, 14; and 40 miles north of Mobile (at Citronelle, Ala.) 12. Many plants had already made considerable growth and were severely injured. The earliest were a month ahead of last year and their growth was considered early last year. Sand pears had blossomed and were in leaf; the buds on tung oil trees had begun to open and an occasional tree had small leaves. Fortunately Satsuma oranges had not started to grow new wood, but flower buds were beginning to swell. Pecans were still dormanc. Cabbage plants were from newly set out to harvesting size; approximately 400 acres of English peas were planted in Jackson County, Miss., with a small acreage in Baldwin Co., Ala. From 15-20 per cent of the usual Irish potato crop in Baldwin Co. had been planted. Lettuce, beets, radishes, onions, spinach and carrots were up in early spring gardens. It appears that with the earliest plants to begin growth damage increased in severity north from the Gulf; with plants just beginning growth the reverse was true. The latter were a few days later in growth 65 miles north of the Gulf.

"At Fowl River, orange growers expect part of a crop this year; only from 25 to 30 per cent of the leaves on their trees are dropping. Farther north, practically all the leaves are falling and no crop is expected, even in orchards that were heated. It is not likely that much wood is injured; only trees unthrifty from purple scale or other causes are apt to be killed. Near the Gulf there are some green leaves still on the Sand pear trees; at Citronelle growers and shippers expect no crop for two years. Some of the wood is killed back to five-year-old growth. Tung oil enthusiasts declare no appreciable damage has been done to their trees. On actual examination it is found that a small percentage of the twig tips are killed back from one to several inches and from 10 to 40 per cent of the buds are killed. Young trees still in the nursery are injured more than older trees, and trees at Moss Point, Miss. suffered more than trees at Cirtonelle, Ala. The few exceptional trees found in leaf were killed to the ground. The oldest trees observed are five years old. No report is made regarding the tung oil plantings near Picayune and Carriere, Miss. The loss on cabbage is estimated at 25 per cent. English peas, lettuce and radishes are a total loss; carrots were not appreciably damaged; beets, onions, and spinach range between. Irish potatoes planted before the freeze probably are not behind those planted since because heavy rains have caused the later planted potatoes to rot."

BULB INVESTIGATIONS

Early flowering of Coral Lily. Those of us who appreciate the fact that man does not live by bread alone, and that to be effective our work must be ornamental as well as useful, will be interested in some of the observations by David Griffiths and R. C. Wright on the early flowering of the coral lily.

"Our knowledge of plant handling grows like accretions in calcareous waters," they declare, if you get what they mean, "so a note on some preliminary forcing of Lilium tenuifolium as a basis for further experimentation by those to whom the item makes appeal may be serviceable. We call for red at Christmas. This lily is certainly the reddest of the reds, is light and graceful, and harvonizes well with the conventional trimmings. It seems also very amenable to handling under glass, and as sensitive to temperature manipulations during the storage season as Wedgewood iris.

"A surplus of bulbs of Lilium tenuifolium was available at the U. S. Bellingham Bulb Station, Bellingham, Wash., when the general lily planting was shifted the latter part of last August. These were 3-year-old seedlings produced at the station and had remained undug two years. The plants had produced a small crop of seed each year and the whole crop was fully mature by August 20 when digging occurred. About 250 bulbs with roots attached were shipped by parcel post wrapped in oiled paper without packing material to the Arlington Farm and put directly into a constant temperature of 36° F. without unwrapping. They were taken out and potted October 22, and put under the benches in a greenhouse without heat but where the air temperature ran up to 70° F. and occasionally to 75 or 80° F. during the day."

The growth began showing November 4 when all the pots were put on top of the benches--the date of the first frost. By the 5th the roots left on the bulbs were branching out 2-4 inches, indicating that there is an advantage in preserving the roots even in this species. On November 8, one pot was placed in a constant temperature of 75° F. where it remained until November 10. It was then 4 inches high, with buds showing plainly. It was transferred to a house with a night temperature of 55-60° F., remaining there until time of flowering. From November 4 on, the general stock was held at 50-55° night temperature. On December 21, four plants had open flowers, one of these being in the pot held in the constant 75° temperature for a short time and at a slightly higher temperature afterward than the main stock. There were some blasted buds in most of the pots, but over half of the plants opened every flower. The test, therefore, seems to indicate that Lilium tenuifolium may be flowered for Christmas without much difficulty.

"Attention should be called to the lateness of the Bellingham situation. Even there the bulbs could have been dug profitably two weeks earlier .....It may be that a month at 36° would be sufficient time for cold treatment." There are many favorable locations where the lily will mature two weeks earlier than at Bellingham. This consideration in connection with the late potting and nearly two months in storage gives an abundant leeway for variations in the methods of handling.

ADMINISTRATIVE NOTES

Scrip and Mileage. The especial attention of those of our workers who perform travel is called to the following memorandum to chief of bureaus and offices sent out by Doctor Stockberger under date of February 28, 1933:

"Scrip and Mileage Books.

On February 3 the Department submitted to the Director of the Budget a proposed circular authorizing purchase by officers and employees of the Department of scrip and mileage books irrespective of the limitations imposed by par. 34 of the Government Travel Regulations: "When continuous travel between places but a short distance apart is involved and a substantial saving or convenience to the Government will result, scrip or mileage books may be used when authorized." The object of the proposed change was to take advantage of the new types of scrip book offered for use west of the Mississippi River at prices representing a net rate of 2.7¢ per mile.

Under date of February 25 the Director of the Budget replied as follows: "Following the receipt of your letter of February 3, regarding the use of scrip or mileage books recently placed on sale by railroads operating in the western section of the United States, I took this matter up with the Comptroller General of the United States and inclose herewith for your information a copy of his letter of February 21, together with a copy of my reply thereto of this date."

The Director's letter to the Comptroller General mentioned in the preceding is as follows: "Acknowledging your letter of February 21, in reply to mine of February 15, 1933, regarding the scrip of mileage books recently placed on sale by railroads operating in the western section of our country, I feel from your remarks that it will be advisable to postpone action in this matter for the present with a view to giving it consideration in connection with the general revision of the travel regulations."

The Comptroller General's letter to the Director of the Budget indicates that no change in the regulation or practice should be made without the President's specific approval. It contains this paragraph: "However, if the President should conclude to temporarily modify paragraph 34 of the regulations so as to permit a more extensive use of the scrip, to avoid costly confusion it should be made clear in any change of the Regulations that transportation requests may not be employed in purchasing scrip."

Pending, therefore, a definite change in the regulations, which will emenate necessarily from the President, the practice of Department employees should be governed by par. 34 of the Government Travel Regulations as it now stands."

ADMINISTRATIVE NOTES

Issue Transportation Requests for ferry, etc. The number of suspensions from reimbursement accounts made recently because employees had failed to issue transportation requests for fares on ferrys, etc. calls attention to the fact that Par. 20 of the Travel Regulations directs that "Transportation requests should be used, when practicable, to obtain all official transportation where the amount involved is $1.00 or more..." All official transportation manifestly includes ferry, bus fares, railroad, Pullman, etc. Where it is not practicable to issue transportation requests, the reimbursement account should be accompanied by a statement explaining the reason.

The same paragraph of the Travel Regulations states that transportation requests should not be issued to companies other than transportation lines commonly recognized as such. Frequently small ferries are operated by individuals or small local companies unfamiliar with the use of transportation requestsand who would not know the method to use in securing payment from the Government. In cases of this sort, a statement attached to your account to show that the ferry, etc. is not managed by a commonly recognized transportation line, that the operators are not familiar with the use of our transportation requests, etc., will be acceptable. However, please remember to use transportation requests wherever practicable.

PERSONAL AND CONFIDENTIAL! The Scientific American for March, 1933, under the title "When Cabbage Has the Yellows," does us the honor of using much of the material in our "A Report to Stockholders" issue of October 15, 1932, the author, T. Swann Harding, giving the Division plenty of credit for its work.

Especially pleasing, too, is the editorial note which accompanies the article: "The accompanying article discusses with much vigor a different kind of 'Report to Stockholders,'" it says. "From the facts presented here, we begin to suspect that, hidden away in the maze of governmental departments, divisions, and bureaus in Washington there may be, must be, many others besides the one discussed (Horticultural Crops and Diseases) that pay huge dividends to their stockholders: to you and me. Slashing governmental expenditures for greater economy should be based, therefore, not on political expediency but upon a judiciously calm consideration of the facts in each case. There was a goose that laid a golden egg, you know..."

The moral of this, I believe, is that every project leader, every investigator, should make an effort to present to the NEWS LETTER at least an account of the achievements of his project which he considers most outstanding. We need this material for future reports to stockholders. Recognition by a periodical of the standing of the Scientific American is gratifying; let's continue to prove that it is justified, too.

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The OFFICE OF
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NEWS-LETTER

BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF HORTICULTURAL CROPS AND DISEASES

S E M I -- M O N T H L Y N E W S L E T T E R

The official organ of the Division of Horticultural Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.

John A. Ferrall, Editor

This NEWS LETTER is for distribution only to employees of the Division, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Horticultural Crops and Diseases. The reports of field workers, of course, represent their personal opinions and are not necessarily the official and final word on the subjects which are discussed.

Vol. V. Washington, D. C., April 1, 1933 No. 7

Ornamental-- and Useful!

The husband stopped the car and crawled wearily out to take a look. "Well, what's the matter now?" inquired his wife, querulously. "Puncture," he replied, shortly. "Well," was the comforting remark from the wife, "you should have been on the lookout. The man back there told you there was a fork in the road!"

I suppose that I should have been on the lookout, too, after all that Dr. David Griffiths has told me about the importance of the work on ornamentals, but I was decidedly surprised to find that the census figures show that annual receipts from sales of such horticultural crops as flowers, bulbs, nursery products, etc. reach the amazing total of $175,000,000.00, in round numbers. This certainly indicates that anything in the way of improved cultural methods, disease control, new and better varieties, etc. means thousands of dollars in the pockets of growers every year.

It is therefore very interesting to find Doctor Griffiths writing in the Florists' Review that he sees no reason why a good grower who gets his soil up in proper tilth and fertility and maintains a rigid rotation may not expect to produce 50,000 to 60,000 merchantable bulbs to the acre in the Pacific Northwest. We have done considerably better than that on our experimental tract at Bellingham, Wash., turning out from 32,000 to 40,000 merchantable bulbs on something less than half an acre. The latter total was reached in 1932, when the area planted was being reduced and it was not necessary to keep a large complement of big bulbs for planting. Oh, yes, I'm talking about tulip yields!

A turn-off at the rate of 70,000 to the acre with enough reserved to maintain the same area planted for the next year is considered about the maximum production, says Doctor Griffiths. Its maintenance over a period of five consecutive years under experimental conditions is rather encouraging for the future of tulip culture. It is not to be expected that commercial culture will attain anywhere near this yield. It is more than likely that large commercial growers may devise a method of culture in rows about three feet apart as is now done with daffodils.

Closely set, double, or treble rows about three feet on centers may be close to the plan adopted. Already one progressive firm has adapted a potato digger to lift tulips as well as daffodils. When, however, the wider planting is adopted, the acre yield will be reduced. The general commercial average may not be more than two-thirds of the experimental yields we have secured at Bellingham.

"The soil of the Bellingham tract is a heavy loam made friable by good culture and the incorporation of humus through cover crops and handling in meadow. We call the tract a half acre but it is really considerably less, measuring 45 feet in width and being 390 feet long, the remainder of the half-acre being taken up by pathways and turning rows. The planting is in furrow-rows across the plot, all planting being done with a plow, and each furrow planted. A single horse is used on an eccentric hitch allowing him to walk on the land and come back empty. During the past five years, three-row widths have been employed. We started with a 12-inch row when the bed method of culture was abandoned. This was found to be too narrow to walk through without injury to the bulbs, and the wheel hoe also did more or less damage. Fourteen inches was next adopted and finally 15 inches, which will probably be permanent unless it may be decided to use still wider rows for such rampant and prolific leaf producers as Allard Pierson.

"The bulbs go to the field segregated into mostly 3, often 4, but seldom 2 or 5 sizes. These may be 5 to 8, 8 to 10 and above 10 centimeters, or other calibrations may be employed depending on the nature and quality of the bulbs. Sizing may on occasions be 5 to 7, 7 to 8, 8 to 10, 10 to 12, and above 12 centimeters. Sizing gives a better opportunity for an even distribution of plant material on the ground. The bulbs are all distributed by hand."

The well balanced planting, Doctor Griffiths points out, will contain increasing proportions of merchantable bulbs, round or long-necked bulbs, and slabs, offsets or flat bulbs. There may be two sizes in each or some of these categories, and all of the first two and many of the third class will blossom the next year. No bulb is merchantable, of course, until it has flowered once, and even then it much reach a normal size for the variety before being marketed for florist or bedding use. In other words, the fact that a bulb will flower does not necessarily make it fit for forcing or bedding.

FRUIT AND NUT PRODUCTION

H. L. Crane, Albany, Ga.

"The cover crop situation is discouraging at this time," he writes March 4. "On February 14th, a careful examination was made of the areas seeded to Monantha vetch on the station farm and no evidence of the new supposedly bacterial disease was found. On March 1st fully one-half of the plants in the best areas were dead. This disease was found in all of the various locations where this plant was seeded on the farm. Austrian winter peas were almost all killed by various fungous diseases. The only cover crop plant which looks promising at this time is hairy vetch...Experiments show that rather remarkable increase in stand and yields of vetch and peas has followed application of phosphoric acid at the time of seeding the cover crops.

"On Friday, accompanied by Mr. Fowler of the Bureau of Chemistry and Soils, a trip was made to McRae and the young orchard of Mr. C. L. Crider was gone over. At that time he and his men were instructed how to prune the trees. A cover crop program was discussed and he will plant the entire 200-acre orchard to velvet beans. Certain parts of the orchard were planted on land that is too wet for pecans and trees in these areas are being removed. Mr. Crider is very enthusiastic about the help and information he secures from the Department of Agriculture."

In an earlier report he told of an inspection he, Mr. Demaree and Mr. Fowler made of injury caused by the freeze of February 9th. He found from 95 to 100 per cent of terminal buds of tung oil injured and from 75 to 80 per cent killed. In some cases the shoots were killed back as much as a foot or more and in many cases they were killed back from 4 to 6 inches. In one orchard the shoots were killed back on an average of 2 to 3 inches. Peaches were uninjured, but pears severely damaged.

C. P. Harley, Wenatchee, Wash.

"I had an opportunity to make some observations last week on Anjou trees that were affected with cork spot last year," he writes under date of February 28. "The orchard is owned by Mr. J. H. Auvil at Entiat. He told me he planned to dig a drainage ditch through his orchard and I availed myself of that opportunity of studying the roots. In examining the soils, I discovered a strata of soil about 8 inches from the surface which was extremely high in alkali. The trees which were badly affected last year were marked and it was very interesting to me to observe that the roots were growing and apparently developing normally in the upper 8 inches of soil and in the soil beneath the alkali layer. However, in the lime zone there were very few feeding roots and those which were present were apparently dead. This, I think, is additional evidence to what we observed last year that root injury seems to accompany these cork spot troubles, although this injury may have its origin from a variety of sources."

FRUIT AND NUT PRODUCTION

Pear Production Research, Medford, Ore.

"The past week has been the busiest so far this season," says the report of March 13. "Arch Work supervised the installation of 500 feet of wood-stave pipe for irrigation water supply to the new 'pruning-thinning-irrigation' experiments; and also completed the new concrete water measuring and distributing box at the head of the plots.

"Tuesday, I cut back about 15 limbs on each of 12 trees in Block 1, so that a grafter could put two Bartlett cions on each limb. In 7 hours the grafter put in over 500 cions. This work completes the topworking of 12 trees, in border rows, to the Bartlett variety, to insure large amounts of Bartlett Pollen to all trees in all plots during the one season out of five when conditions are unfavorable for maximum pollination. Such topworking would not be necessary, according to Mr. R. C. Reimer, in commercial orchards. However, since the set of Anjou blossoms is a limiting factor in experimental plots precautions had to be taken to insure even pollination throughout all trees.

"In accordance with the plans in my 'Anjou Set' project, four trees were given, in addition to the light thinning of shoots, a complete pruning by spur removal. A known number of blossoming points (900-1200) were removed, and the total blossoming points remaining counted. This removal of approximately 1,000 blossoming points is similar to the 'heavy' pruning in removal of blossoming points, but dissimilar in that the 'heavy' pruning removed more shoots and more old growth. By a comparison of 'spur' and 'heavy' pruning, I hope to learn whether the invigorating effect of heavy pruning is due to blossom removal or to some other factor or factors."

C. E. Schuster, Corvallis, Ore.

"The past week has been spent largely in growth measurements of filberts," he writes on March 11. "Work could be carried on during short periods of time only, due to stormy weather...Probably 50-60 per cent of the female flowers of the filberts are dead. A few are just coming through the bud scales and the remainder are in various stages of development. Practically all pollen of all kinds has been shed.

George F. Waldo writes from Corvallis, Ore. on March 4 that trips made into the surrounding country showed considerable winter injury and it appears that the Ettersburg strawberry plants are not going to recover. The Marshalls, although injured considerably, were showing signs of recovery. Loganberries and Cuthbert red raspberries showed considerable cane injury as well as killing in the buds.

FRUIT AND NUT PRODUCTION

Milo N. Wood, Sacramento, Calif.

"Owing to the weather, the blooming of the hybrid trees is much later than last year," he reported on February 25. "Necessary crosses will be made as soon as the trees begin to bloom...The bitter trees and the spider resistant trees have been marked conspicuously. A student will continue the work upon the chemical means of determining bitter qualities in the bark of almond trees, and it is hoped that the methods previously discovered can be sufficiently refined to make it possible to apply the test to the bark or young nursery trees. When crosses have been made between varieties consisting of parents both of which produce sweet almonds, ap-approximately one-fourth of the F_1 generation produce bitter nuts. If we can eliminate the trees in the nursery by means of a workable chemical test, a great deal could be saved as it would not be necessary to wait for the trees to come into bearing before determining whether or not the nuts were bitter."

A. D. Shamel, Riverside, Calif.

"Last week was devoted to obtaining performance records in our lemon progeny plots," he writes on March 6. "The picks are heavy at this season. This week will be given over to securing Washington Navel orange tree performance records in our pruning and girdling plots at Corona, beginning tomorrow at 6 a.m."

"The concerted effort of the packing house managers to eliminate the shipment of choice or low grade oranges and grapefruit, doing away with the loose pack, is still an unsettled matter. As a matter of fact, the present low prices automatically prevent much shipment of such fruit and tends to prevent any large movement of any kind of fruit."

C. E. Schuster, Corvallis, Ore.

Writing on March 4, he reports that pollination work with the filbert was being conducted. "One important discovery made at this time, or rather verified," he says, "is the fact that after years of working all with all kinds of pollen I suddenly find myself susceptible to filbert pollen! In the presence of this material, I got the most beautiful case of hay fever that a person could expect...

"More winter injury is showing up in the Willamette Valley as the season progresses. Some walnut trees have been found with a large percentage of the buds killed in the lower part of the tree. In other cases it seems that the catkins are suffering worse. Peaches are reported to have suffered extensively."

FRUIT AND NUT PRODUCTION

Elmer Snyder, Fresno, Calif.

"Approximately 10,000 resistant rootstock cuttings were planted in nursery row at the Fresno plot during the week," he writes on March 11. "These were also irrigated to settle the soil around the cuttings. Additional grafted cuttings will be planted in nursery row later."

On February 25 he write: "Grape seedlings representing the F_2 generation of previous controlled crosses made at the U. S. Experiment Vineyard, Fresno, Calif. were segregated into individual propagation pots. These seedlings are growing under greenhouse conditions. Later they will be transplanted in gallon cans and grown under a lathhouse during this coming summer. Approximately 800 seedlings were transplanted with some additional numbers to be transplanted during the coming week.

"In connection with the seedling work, a small soil sterilizer using an electric current for heating purposes has been developed at this station. As the soil for seedling work was being sterilized, experimental runs were made noting the time, rapidity of heating, and the amount of electric current used. A summary of 12 runs indicates that 1,020 cubic inches of soil was raised in temperature 126 degrees F. in approximately 10 minutes, using .58 KWH, costing 3/4th cent. The above amount of soil was sufficient to fill two regular greenhouse flats 3 x 14 x 22-1/2 inches.

"Progress was made in preparing the land for a new planting of approximately 4 acres at the Fresno vineyard. The land was plowed, disced, floated and the plot staked out. Permanent stakes were driven on a portion of the plot and the remainder to be completed during the coming week. Additional labor has been hired to complete this work so that the vines can be planted as soon as possible. The stock vines, Solonis x Othello No. 1613, were disbudded and prepared for planting."

One of the important new publications of the Department is the revision of Farmers' Bulletin No. 1398, "Currants and Gooseberries: Their Culture and Relation to White-Pine Blister Rust," authored by Dr. Geo. M. Darrow of our Division and Dr. S. B. Detwiler, Principal Pathologist in Charge of the Division of Blister Rust Control of the Bureau of Plant Industry. It is rather amazing to the layman to find that the currant and gooseberry industry must be considered in connection with the preservation of our valuable white pine timber. In fact, the bulletin recommends that the growing of cultivated black currants, in home gardens, as well as in nurseries and commercial plantings, should be entirely abandoned in certain States because of the great importance of the white pine and the relatively small value of the black currant.

FRUIT DISEASES

Paul W. Miller, Corvallis, Ore.

"What appears to be the perfect stage of walnut blotch caused by Marssonia juglandis, was found on old fallen walnut leaves collected from the ground under an infected walnut tree in the vicinity of Ferndale, Wash.," he wrote on February 25. "The perfect stage of this fungus seems to be Gnomonia, probably Gnomonia leptostyla....The bulk of the pistillate flowers on the Barcelona filberts are past full bloom. Many staminate flowers on the DuChilly variety are now shedding pollen. However, the pistillate flowers on this variety are not in bloom yet."

Earlier in the month he had written: "Attempts to isolate Ps. juglandis from natural soil collected from under a badly infected walnut tree were negative. Attempts to recover the walnut blight pathogene from natural soil which had been inoculated with a water suspension of Ps. juglandis 87 days prior to the date of isolation attempts were likewise negative. The walnut blight pathogene was isolated, however, from inoculated sterile soil to which had been added pure water suspensions of Ps. juglandis 87 days before the time of isolation attempts. Judging from the results of these studies it appears that Ps. juglandis can live in sterile soil for at least 87 days. In natural soil where it has to compete with a normal soil flora the blight organism seemingly dies out in a relatively short time. The fact that Ps juglandis has never been isolated as yet from natural soil collected from under badly infected walnut trees would seem to indicate that under natural conditions the blight pathogene does not overwinter in the soil."

Howard E. Parson, Spring Hill, Ala.

"Crown gall was observed on a top-worked pecan tree six or eight feet above the ground," he writes on March 11, speaking of a survey made of badly rosetted pecan orchards in Mississippi and Alabama to find one where rosette experiments might be conducted. Crown gall is not uncommon on pecans," he continues, "but I have not observed it above the ground line before. It is thought that the galls are not overgrowths from poor unions, since some occur beyond the graft unions. Similar overgrowths have not been observed on budded or grafted pecans before."

John C. Dunegan, Fayetteville, Ark.

"Many of the peach brown rot apothecia mentioned in last week's report were found to be above the ground but still unexpanded on March 17," he writes. "The apothecia seem to be further along in their development for the season than the peach buds on the neighboring trees. It is of course true that the correlation between apothecial production and the blooming of peach trees is only approximately correct and in some seasons the development of the apothecia lags behind that of the buds or vice versa."

FRUIT DISEASES

Leslie Pierce, Vincinnes, Ind.

"The peach crop in this section escaped damage from frost by a narrow margin the night of March 9," he writes under date of March 11. "A low of 14 degrees was recorded at the laboratory in Vincennes and temperatures as low as 12 degrees were recorded by minimum thermometers in some of the commercial orchards. Fruit buds of a number of varieties of peach from several orchards were examined March 11. Of this lot of several hundred buds only three showed frost injury. The present prospect is for practically a full crop of Elberta, South Haven, Hiley, and Champion; and about 50 per cent of a crop of Hale. This estimate applies only to Knox county. Recent reports are that the peach crop will be from very light to a total failure in other sections of Indiana.

"Purkoff wheat, a variety developed by the Purdue Experiment Station, is making a good showing as a cover crop in the Purdue-Vincennes peach orchard. This variety of wheat is as resistant to winter injury as rye, and is more desirable for use as a cover crop in an orchard on account of the fact that it heads out at least three weeks later than rye, so that the first two spray applications may be completed before it is necessary to disc under the wheat. This variety of wheat has been planted as a cover crop in the experimental orchards at Lafayette for the past several years."

Earlier he had written that information being received indicated that the peach crop of southern Illinois has been wiped out, practically, by the freeze. Central Illinois, including the Centralia district, was reporting prospects for something like 50 per cent of a crop. The peach crop in southern Michigan appears to be a total loss....A special meeting was held at the Vincennes laboratory with workers from the Illinois, Purdue and Kentucky stations present, and an attempt made to formulate spray schedules to control mild, moderate and severe infestations of codling moth. Schedules were arranged for orchards equipped with washing machines and for those where it is impossible to wash the fruit....Elberta buds, according to reports, showed a mortality of 92.5 and Belle of Georgia 83.5 as a result of the freeze....and the peach crop is said to be completely destroyed in Oklahoma, Texas, Arkansas and western Tennessee.

M. A. Smith, Ozark Fruit Disease Laboratory.

"The below zero temperatures which we had in February apparently did no damage to early apple buds, and we have prospects for a good crop of both early and late apples in this section," he writes March 18. "Ben Davis, Winesap, Jonathan, Stayman, York and Delicious buds are still wholly dormant. There has been a slight swelling of buds of Transparent and Duchess....The peach crop in this section has been entirely killed...Many of the apple scab perithecia being found now are rapidly maturing.

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

Edwin Smith, Wenatchee, Wash.

"At a meeting of the Field Men's Association on March 4th, the subject of the State's work at the Chelan County Experiment Station was reviewed by Mr. A. R. Chase, in light of the fact that the County Commissioner's had voted not to allow any county funds to support this work during 1933," he reports on March 13. "Subsequently at the District Horticultural Club on the evening of March 6th, Mr. James Marshall related how the State Experiment Station had worked out what they hope to be measures to control the free arsenic in calcium arsenate sprays, and outlined field experimental work along this line for the coming summer. This, however, is dependent upon support from the county. A large group of growers met with the County Commissioners on Monday night and we understand that they now have the subject ot Experiment Station support up for reconsideration.

"The Wenatchee Industrial Laboratory is now running regular lead analysis by the short method and has completed over 200 analyses out of which less than 10 samples have failed to pass. The Bureau of Chemistry and Soils is also working with the method and before analysing samples of the washing experiments are checking their results from the short method with determinations by the long method.

"Fruit shipments are about back to normal with the banks taking shippers' drafts for collection and crediting them with deposits accordingly. Those who send drafts to the buyers' banks for collection have scarcely held up shipments at all, being confident that by the time cars reach destination the banking situation in the various markets will be straightened out. Some shippers have been reluctant to sell over the auction because the auction companies have not guaranteed collections since the break of banking difficulties in the East. However, this does not seem to have diminished auction sales."

G. B. Ramsey, Chicago, Ill.

We have had an unusual amount of soft scald of apples this winter, he reports, an especially high percentage (10-30 per cent) being noted in the Northwestern Greenings from New York. Other varieties also have shown considerable, however, and indicate that the stock was not stored soon enough, or not held at the proper temperature.... The usual amount of storage breakdown is showing up in onions...three or four lots of oranges have shown considerable brown discoloration of the skin, apparently due to some chemical injury. One lot of oranges from California showed a slight amount of Brown Rot, apparently due to Pythiocystis. This is an unusual or rare type of decay for oranges, although it is frequently noted in lemons....Wisconsin potatoes have shown only a slight amount of Altenaria Tuber Rot this year...The earlier shipments of Florida tomatoes showed a considerable amount of Phoma Rot.

ADMINISTRATIVE NOTES

Purchasing Foreign Goods. "Title III of the 'Act Making Appropriations for the Treasury and Post Office Departments for the fiscal year ending June 30, 1934, and for other purposes," approved March 3, 1933, places definite restrictions on the purchase of articles, materials and supplies of foreign origin," Mr. Schoenhals points out in a memorandum dated March 18. This applies to all Government purchases made subsequent to March 2, 1933, excepting those based on contracts (either oral or written) entered into prior to March 3, 1933. Sections 2 and 3 (a) of this Act are quoted for your information:

(SEC. 2 Notwithstanding any other provision of law, unless the head of the department or independent establishment concerned shall determine it to be inconsistent with the public interest, or the cost to be unreasonable, "Only such unmanufactured articles, materials, and supplies as have been mined or produced in the United States, and only such manufactured articles, materials, and supplies as have been manufactured in the United States substantially all from articles, materials, or supplies mined, produced, or manufactured, as the case may be, in the United States, shall be acquired for public use". This section shall not apply with respect to articles, materials, or supplies for use outside the United States, or if articles, materials, or supplies of the class or kind to be used or the articles, materials, or supplies from which they are manufactured are not mined, produced, or manufactured, as the case may be, in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality.

SEC. 3 (a) Every contract for the construction, alteration, or repair of any public building or public work in the United States growing out of an appropriation heretofore made or hereafter to be made shall contain a provision that in the performance of the work the contractor, subcontractors, material men, or suppliers, shall use only such unmanufactured articles, materials, and supplies as have been mined or produced in the United States, and only such manufactured articles, materials, and supplies as have been manufactured in the United States substantially all from articles, materials, or supplies mined, produced, or manufactured, as the case may be, in the United States except as provided in Section 2; Provided, however, that if the head of the department or independent establishment making the contract shall find that in respect to some particular articles, materials, or supplies it is impracticable to make such requirement or that it would unreasonably increase the cost, an exception shall be noted in the specifications as to that particular article, material, or supply, and a public record made of the findings which justified the exception.)

"Referring to this act the Director of the Division of Purchase, Sales and Traffic has offered the following suggestions:

1. Open Market Purchase Orders.--Unless it is reasonably clear the proposed purchase falls squarely under that portion of Sec. 2, of the legislation which excepts the purchase of certain articles, materials, and supplies from the application of the law, all open market purchase orders should include the following language:

Only articles, materials, and supplies of the growth and production of the United States and/or of manufacture in the United States from articles, materials, and supplies substantially all of the growth or production of the United States are acceptable under this order; and vendor guarantees that in filling this order his deliveries will conform to this requirement.

2. Construction Work Not In Excess of $1,000 (no formal contract to be required).---Where construction or repair work is of such character and such amount that Standard Form 33 is employed in advertising, there should be included in the specifications a paragraph as follows:

In the performance of the work under this specification the contractor, subcontractors, materialmen, or suppliers, shall use only such unmanufactured articles, materials, and supplies as have been mined or produced in the United States, and only such manufactured articles, materials, and supplies as have been manufactured in the United States substantially all from articles, materials or supplies mined, produced, or manufactured, as the case may be, in the United States. The submission of a bid on this specification will constitute bidder's contractual obligation to meet the foregoing conditions.

3. Purchases of articles, supplies or materials in excess of $50.00

All drafts of specifications on Standard Form No. 33 under this head for purchases of this kind should contain the following provision:

Bidder hereby warrants that all unmanufactured articles, materials, and/or supplies offered herein have been mined or produced in the United States, and that all manufactured articles, materials, and/or supplies offered have been manufactured in the United States wholly from articles, materials, or supplies mined, produced, or manufactured, as the case may be, in the United States, except as stated below: _____
_____"

This means that all Form 1034 vouchers sent to us covering purchases made subsequent to March 2 must be accompanied by a certificate (a supply of which has been sent to field employees) signed by the dealer to the effect that the supplies, etc. are produced or manufactured in the United States, etc. Supplies ordered prior to March 3 but not received until that date or later must be accompanied by explanatory statement. No articles of foreign manufacture or origin should be purchased under letters of authorization. In cases where such purchases are absolutely necessary, we will draw requisition here on basis of full statement as to necessity, and try to secure its approval.

Sick Leave. Under the new regulations covering sick leave it will not be necessary to have notary signatures as the applicant's signed statement alone is now sufficient in connection with sick leave of two days or less. We have corrected our stock of leave slips by striking out the lines "Subscribed and sworn to before me this____day of ____193 (Notary Public" following the "Certificate required for sick leave for two days or less," on the back of Form 17, and you can do the same with any you may have on hand. When our present supply is exhausted the new form will be prepared to fit present regulations, of course.

Appearing as Witnesses. Employees engaged upon work through which they acquire from property owners or others information or data of a confidential nature (land values, crop values, operating costs, income, profit, etc.) must regard such information as the confidential property of the Department of Agriculture says the Acting Secretary in an order dated February 15, 1933, copies of which have been mailed to all of our workers. Employees are prohibited, therefore, from disclosing such information, giving out copies of records, or producing such records in court, or appearing as witnesses, expert or otherwise, in any litigation for the purposes of testifying as to any facts or knowledge received by them through such investigational or other work--except as may be directed by the Secretary of Agriculture.

"Whenever subpoenaes shall be served upon such employees," reads the order of February 15, "they will eappear in court in answer thereto, and respectfully decline to testify to, or produce records pertaining to the matters referred to herein, as the confidential property of the Department of Agriculture, on the ground of their being prohibited therefrom by this order."

In view of these instructions, you are requested to wire to Doctor Auchter immediately upon being subpoenaed to appear as a witness to give information bearing on your Department activities, furnishing with your letter full information, and to await definite permission before undertaking to testify. In case the Department's interests would be jeopardized by such testimony, you will be so advised and should then present to the Court a copy of the Acting Secretary's Order of February 15, justifying your stand in refusing to testify.

Per Diem for Holidays. We have been advised that payments of salary for holidays may not be made to employees whose appointments provide for payment on a per diem basis unless service is actually performed. This ruling will apply to all per diem employees regardless of whether their appointments are made for a specific period or on an indefinite basis. This ruling is in accordance with decisions of the Comptroller General and cancels the regulation in effect prior to July 1, 1932, which authorized payment to per diem employees for holidays if they worked the day before and the day after the holiday.

ADMINISTRATIVE NOTES

Sick Leave. A change has been made in the regulations concerning sick leave. Paragraphs 510 to 520 of the Administrative Regulations have been revoked, and Par. 509 amended to read:

"509. SICK LEAVE.--Grants to officers and employees of the department of the sick leave allowed them by law (see paragraph No. 484, Administrative) shall conform to the following standard sick leave regulations prescribed by the President in Executive Order No. 6021, dated February 9, 1933, and effective on and from that date:

(1) Sick leave with pay may be granted to civilian officers and employees by the executive departments and independent establishments of the Government, within the limits now authorized by law, when in meritorious cases such officers and employees are incapacitated from the performance of their duties by sickness or injury; or when some member of the immediate family is afflicted with a contagious disease and requires the care and attendance of such officer or employee, or when, through exposure to contagious disease, presence at his post of duty would jeopardize the health of others.

(2) The entire amount of sick leave authorized by law may be granted at one time or fractionally. The minimum charge for sick leave shall be one-half day. The period of sick leave that may be granted in any one leave year shall not exceed 30 days, unless a longer period is specifically conferred by law.

(3) Slight illness or indisposition, or absence for the purpose of medical examination, will not be regarded as sufficient reason for the allowance of sick leave. Absence for the purpose of being treated professionally by a dentist or oculist in his office is not allowable as sick leave, but this is not intended to disallow sick leave for detention at home or hospital by illness or disability due to causes as to which a dentist or oculist is qualified to certify.

(4) Unless otherwise prescribed by law, sick leave expires at the end of the leave year and is not cumulative and may not be granted at the beginning of the leave year immediately following a period of absence in a nonpay status in the preceding leave year unless and until there has been a return to actual duty in the new leave year.

(5) Sundays and holidays within a period of sick leave will be charged as sick leave except when immediately preceding or following a period of sick leave if the officer or employee was in a pay status immediately prior to or following such Sundays or holidays.

(6) Notification of absence on account of sickness shall be given as soon as possible on the first day of absence. Application for sick leave must be filed within two days after return to duty.

(7) The application for sick leave for periods in excess of two days must be supported by the certificate of a registered practicing physician or other practitioner, except that in remote localities where such certificates can not reasonably be obtained, the applicant's signed statement as to the sickness and the reasons why a certificate is not furnished may be accepted. For periods of two days or less, up to an accumulation of 12 days in any one leave year, the applicant's signed statement on the required form may be accepted."

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The OFFICE OF
HORTICULTURAL CROPS AND DISEASES
SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF HORTICULTURAL CROPS AND DISEASES

S E M I -- M O N T H L Y N E W S L E T T E R

The official organ of the Division of Horticultural Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.

John A. Ferrall, Editor

This NEWS LETTER is for distribution only to employees of the Division, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Horticultural Crops and Diseases. The reports of field workers, of course, represent their personal opinions and are not necessarily the official and final word on the subjects which are discussed.

Vol. V. Washington, D. C., April 15, 1933 No. 8

The Navel Orange-- and Elephant Milk!

It is, of course, easy to tell the exact truth in a manner to give the wrong impression, as the Better Business Bureau is reported to have discovered in the course of an investigation of the advertising of a gentleman who was offering for sale what he claimed to be elephant's milk, and whose announcements carried the statement that babies using it had gained as much as 20 pounds in a single week! The Bureau found that his statement was absolutely true--but he had reference to baby elephants. If the readers of his advertisement jumped to the wrong conclusion, he protested, was that his fault? The Bureau decided that it was.

The difficulty in talking about the work of our Division, however, is that it is not easy to make even the simplest statement of truth about some of our lines of investigation without appearing to be guilty of wild exaggeration. I am forcibly reminded of this by reading in the California Citrograph for April A. D. Shamel's account of the origin and introduction of the Washington navel orange. This account was read at the dedication, on February 17, 1933, of a historical marker erected by the State of California at the site of the surviving tree of the Washington Navel orange parents. From this tree (and the sister tree, which died in 1921) the more than 10,000,000 Washington navel orange trees in California orchards are directly descended through bud propagation.

The Citrograph in the same issue points out, by the way, that oranges top the movies as a source of created wealth in southern California. The movies are rated at $76,000,000 annually, while the return from oranges and grapefruit is put at $83,000,000--and the return from all citrus varieties to California in the same comparative period was $103,000,000.00!

As early as 1869, the Department brought in some of these navel orange trees from Bahia, Brazil, but the first lot was found dead when the trees reached Washington. In 1871, a lot of newly budded trees of the variety were secured from Bahia in response to specific instructions from William Saunders, one of the pioneer horticulturists of the Department. Buds from these were inserted in orange seedlings which had been grown for this special purpose in one of our greenhouses here.

In 1873, two of the young trees that had been grown from the buds taken from the Bahian trees were sent to Mrs. Eliza Tibbets at Riverside, Calif., a former resident of Washington, D. C. She planted them in the front yard of her home and when they fruited the oranges were judged to be superior to those of any other variety then growing in California. Buds were obtained by local nurserymen for propagation--and the navel snowball started rolling. It is especially interesting, I think, that the navel oranges does better work under California conditions than in its native home in Bahia, though Californians assure me that this favorable response to California environment is found among humans as well as plants!

But we have done another thing just as important, perhaps, as the introduction of this fine orange--we have "serviced" it in first-class fashion. In commenting on what California Citrus growers have done to meet today's economic conditions, Dalton A. Field, manager of the growers service department of the California Fruit Growers' Exchange said, before the Citrus Institute at San Bernardino last February, "Bud selection is perhaps the best example of what growers have done along this line." And he went on to explain that the bud selection department of the Growers' Supply Company has furnished nurserymen and growers nearly 6,000,000 buds (the exact figures are 5,861,649) from trees of known performance and high quality. (A. D. Shamel, Carl S. Pomeroy, R. E. Caryl, Frank N. Harmon et al, please take a bow!) Mr. Field said that records have been kept on 57,796 trees, from which only 5,912 were selected to supply propagating material.

We have no wish to be suspected of peddling elephant's milk, and we are perfectly willing to concede that even if the navel had not been introduced California would have gone along producing some sort of orange, but the State would have been fitting a square peg in a round hole. It certainly looks from here as though Department of Agriculture horticultural investigations has in this single contribution returned to the American growers--and in a single State--the total cost of all our fruit and vegetable investigations, and then some.

Yes, sir, by their fruits ye shall know them!

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

Edwin Smith, Wenatchee, Wash.

"The writer was in Seattle on March 23," he writes on the 28th, "attending the meetings of the Agricultural Council of the Pacific Northwest Advisory Board. Mr. R. R. Reter's paper, 'The Pear Industry Reduces Freight Costs,' referred to savings effected through our transportation work in a very handsome way. This paper will be published with the proceedings. Mr. Diehl was the only one from our Division appearing on the program. His paper, 'Our Frozen Assets,' was heard with a great deal of interest; his frozen products tasted with general appreciation."

(Editorial Note.--Speaking of "frozen assets," and Mr. Diehl certainly has sublime courage to play with those words in these times, there is a local story to the effect that a prospective depositor was being shown over a bank building, the idea being to impress her with its solidity. They took her down in the basement and showed her the massive vaults and the precautions taken to safeguard valuables and money. She was very much impressed, but shivered a little and drew her coat closely about her. 'It's rather cold down here, isn't it?" she said. The Director, like Mr. Diehl, just couldn't resist the temptation. "Yes," he agreed, solemnly, "this is where we keep our frozen assets.")

But, as Mr. Smith was saying, "Results of winter transportation tests will come up for discussion at the June meetings at Spokane.

"Advancement in apple prices has caused some heartenings in the growing districts. Delicious have reached $1.25 per box for mountain fruit, and sales of Extra Fancy Winesaps have been made for $1.00 f.o.b; Fancy 90¢. The R. A. C. C. has agreed to advance 55¢ per box inclusive of warehousing and sales costs, to qualified growers. The dormant sprays have been postponed until this money is available.

"Aggressive action of the new Administration has had far-reaching influences. One absentee owner of 80 acres at Monitor was not doing anything with his property until a couple of weeks ago, when he sent instructions to hire the necessary labor to go on with pruning operations. Small orchardists have done an immense amount of pruning and tree-removing. Many orchards look like new.

"Mr. Ellison of the Weather Bureau who came to the Wenatchee Station last week, advises that the season is about two weeks behind a normal season at this date. We have had many cloudy days during March, with two days of rainfall during the past week. Temperatures have been moderate."

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

W. T. Pentzer, Fresno, Calif.

"Since making our last report the activities of Asbury and myself have been somewhat dissipated," he admits on March 20. "Early in February we attended the annual meeting of the Pacific States Cold Storage Warehousemen's Association at Del Monte and read a paper and exhibited some of our cold storage grapes and frozen fruits. The week following this meeting, a cutting of our frozen and canned fruits was made in San Francisco in cooperation with the California Canners' League. With the material which Diehl brought from Seattle about 200 samples were cut. The California Canners' League has requested the cutting be made an annual affair, so that the canners of the State may be kept informed on the experimental work being done on the Coast in freezing preservation.

"Representatives of the State Department of Agriculture were visited several weeks ago in Sacramento in connection with spray residue removal, grape maturity standards and cauliflower shipping tests. It was learned that the State Division of Chemistry is maintaining field laboratories to assist vegetable growers in the Chula Vista and Santa Maria districts with their residue problems. Celery from these districts bearing calcium arsenate has been satisfactorily conditioned by washing under sprays of water. The Division of Chemistry plans to issue a circular to County Horticultural Commissioners giving advice from the State Pathologists and Entomologists for the control of insect pests with the minimum use of sprays and dusts difficult to remove. It is hoped that by proper advice, residue problems can be stopped before they arise. The chemists of the State Department are experimenting with the short method of lead determination and expect to try it out on some winter pears in storage.

"It was learned that a bill has been introduced in the State legislature changing the grape maturity standards on Thompson Seedless and Malaga from 17 per cent soluble solids to 18 per cent for districts north and west of San Gorgonie Pass, leaving it at 17 per cent for other districts (Coachella and Imperial Valleys). Emperor, Olivette Blanch, Ladyfinger, Rish Baba, Khandahar, Red Malaga, Khalili, Dismar, Ribier, and a few other varieties must test not less than 16 per cent for the entire State and Muscats must test 18 per cent. It is expected that the bill will be passed.

"Last week two test shipments were made with cauliflower from the Hayward district in which heavier trimming of the heads was compared to the usual amount of trimming. Smaller crates are used with the heavy trimmed flower, and considerable saving is made in the cost of getting the same number to the eastern markets. Weights taken on test crates indicate that the same number and sized heads can be trimmed and packed in the smaller crates with a saving of about 32 per cent in weight.

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS

W. T. Pentzer (continued)

"However, large heads, running 8 to 9 to the standard pony crate, cannot be trimmed sufficiently to be packed profitably in the small crate. It would seem that the small crate is adapted to shipping the small and medium heads of those varieties which have heavy, thick leaves. Some have claimed that the heavy trimmed heads, leaving one good whorl of large leaves, wilt and bruise worse than the ordinary trim. It is the purpose of the test to find if there is any difference between cauliflower from the same field, shipped in the same car and position, packed under the two conditions mentioned above.

"Plans have been made in cooperation with Dr. Henry Jones of the Truck Crop Division of the University of California, for some shipping tests on asparagus from the Delta district. Mr. Bratley, Dr. Ramsey, and Mr. Mann have cooperated in making the plans.

"The tests include trial of various methods of reducing top layer temperatures so that better mold control can be obtained. Considerable trouble is experienced with moldy tips in the top two layers during the latter part of the shipping season when field temperatures are high. Precooling, dipping in ice water, and top-icing are contemplated as means of lowering temperatures in transit. These tests will probably start the latter part of the week.

"Determinations of total acidity and pH of maturity samples of grape juice are being made in the laboratory, with this season's collection of about 400 samples almost completed. Sugar determinations will be started when some of the shipping tests are finished. We are finding again this year a slight increase in the respiration rate of Emperor grapes from month to month in storage at 32 and 36 degrees F. Most of our storage lots of grapes have developed too much mold to be of value commercially and have been discarded. Sawdust packs of Emperors, in which 15 grams of $NaHSO_3$ were added to the sawdust are the best lots remaining, being still practically free from mold and bright in color. The lots fumigated with SO_2 and packed in sawdust show little mold, but have become dull in color and unattractive."

NEW PACKAGES "Innovations in packaging fruits and vegetables have been developed," says one of our Department Press Service Items. "Strawberries are wearing cellophane faces; celery is appearing in colorful cartons having a front window; many fruits and vegetables customarily sold in bulk are being retailed in mesh bags." Paper baskets and hampers are replacing some of the wood containers. The item tells of the appearance, too, of California cauliflower with heads trimmed of outer jackets, wrapped in oiled paper, and sealed in pastboard boxes, each of which held from 11 to 18 heads.

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

Carbon Dioxide

In a discussion of carbon dioxide in fruit and vegetable handling, Dr. Charles Brooks at one of our staff meetings threw a strong light on the importance of efficient transportation in connection with profitable fruit and vegetable growing. The reports of the Freight Claim Division of the American Railway Association, he said, show that between $9,000,000.00 and $11,000,000.00 annually are paid in claims on fresh fruits and vegetables--and it is estimated that 25 per cent of this total is due to diseases and related troubles.

That is only part of it, for the loss to the railroads merely gives one an idea of the greater loss on the market and in the home with products which arrive in poor condition. Then, too, when loss occurs on one shipment it is very likely to mean that the next lot will be picked greener to insure safe arrival--and so on. It is no wonder that methods for preventing such losses pay enormous dividends.

"There have been a great many gas storage experiments reported," said Doctor Brooks, "and I suspect there has been a still larger number that has never been reported. There seems to have been an idea running back for more than a century that there ought to be some way to store fruit in a gas; some gas that would hold spoilage organisms in check without hurting the fruit. Our work started some six years ago with the idea that there might be possibilities in short period gas storage as a protection to food products during the process of cooling. With many products, spoilage in transit is largely a question of the conditions which prevail during the first 24 hours after harvest. Getting the field heat out of a large bulk of tightly packed fruit is a difficult matter and is accomplished slowly in the upper layers of a refrigeration car, even with the partial loads they usually carry. If it takes 24 hours to bring the fruit in the top of a car down to 60°, and 40 hours before it is cooled to 50, brown rot and Rhizopus have plenty of time to make a complete change in the quality and value of the fruit--and inspection records show that they make good use of this time."

In looking for something that might give protection during the first 24-36 hours after the product is harvested, various gases have been tested though our results have not been published in detail. Carbon dioxide seemed to offer as much promise as any gas tested, but just about the time we were becoming interested in its possibilities there was a "boom" in the "dry ice" market and extravagant claims were made for it, so much so that a short article was prepared for the Official Record of April 25, 1928, warning against the dangers of using carbon dioxide or "dry ice" with fresh fruits and vegetables. This article met with decided approval on the part of the ice and refrigeration people, of course, and they hastened to warn the people against the dangers of carbon dioxide. The "dry ice" folks were upset, but we had a good defense--pointing out that since they maintained a research department they had an opportunity to show just what the carbon dioxide would do.

They took up the idea and in a short time two articles were out on the subject. The first was on cut flowers, especially roses, and showed that the life of roses could be considerably prolonged by proper exposure to carbon dioxide gas. The second was on the effects of the gas upon fruits and vegetables. A large number of products were tested and definite injury reported in practically all cases where exposure to a high percentage of carbon dioxide was extended over a period of days. If we had any regrets over having the representative of the Dry Ice Company get his publications out before ours, they were lessened by the realization that it was undoubtedly more effective to have these findings published by the Company than by some less interested party. The net result is that the various companies handling solid carbon dioxide no longer figure on using it with fresh fruits and vegetables without considering the effect of the gas upon the product.

"Our experiments have shown," said Doctor Brooks, "that peaches, apricots, strawberries, and red raspberries will not always stand exposure to an atmosphere containing as much as 25 per cent of carbon dioxide for as long a period as 24 hours at temperatures of 70 to 75°. All other products we have tested have a tolerance at least twice as great. Many fruit decays have been readily controlled. From 25-30 per cent of carbon dioxide has held Botrytis rot of pears, grapes and strawberries, and brown rot of stone fruits more completely in check than 32° storage, and it has also held softening of the fruit in check as well as 32°. In refrigerator cars, carbon dioxide treatments running up to 25 to 30 per cent of gas during the first half hour and tapering off to 5 to 10 per cent at the end of 24 hours have had an effect upon the decay of peaches, strawberries, and dewberries in the top of the car equivalent to a 10° drop in temperature during the entire period of a 3-4 day trip or to a lowering of the temperature 21° during the first 36 hours of the trip. The effect upon the firmness of the fruit was even greater than upon decay.

"Short period treatments with carbon dioxide have some very interesting effects upon the general physiology and upon the physiological diseases. It is possible to produce effects upon the shattering of grapes that are almost magical--if you pick the right variety at the right time...the pitting of grapefruit can be delayed one to three weeks by short-period treatment with carbon dioxide...the life of Bartlett pears may be extended, and the percentage of internal breakdown reduced...

The discussion by Doctor Brooks, and by Dr. Erston V. Miller, who talked of biochemical studies of the treated fruits and vegetables, indicated that there are possibilities for benefits--but also dangers, in connection with the use of carbon dioxide for fresh fruits and vegetables. There is a possibility that commercial changes will make it increasingly important to know what these benefits and dangers are--and we are going ahead to find out all we can, to be able to safeguard the grower, shipper--and consumer.

FRUIT AND NUT PRODUCTION

Atherton C. Gossard, Spring Hill, Ala.

"On Tuesday, Mr. Parson and I drove to Gulfport, Miss. and, in company with Mr. Vernon Pace, County Agent for Harrison County, Miss., looked over some orchards with a view to starting some experimental work on pecan rosette. Some interesting cases of rosette were seen, and an orchard a few miles north of Biloxi, badly damaged by rosette, was selected as a possible location for experiments.

"The remainder of the outside work consisted of taking counts of shoots in various growth length classes on trees in the pruning experiments at Seven Hills. It was both interesting and encouraging to learn that the percentage of shoots, shorter than fruiting length, decreased appreciably and the percentage of long shoots increased on all varieties and ages of trees which were pruned."

Painting Pruned Trees. The Press Service of the Department has sent to its list of newspapers and agricultural publications an item reading: "Long-Handled Brush. -- Fruit growers may make a simple and cheap aid for painting the wounds of fruit trees pruned with a pole saw or pruning poles by fastening a 10-cent shoe dauber to a bamboo or similar pole. The pruning wounds which are beyond easy reach or difficult to get at with a paint brush may then be easily painted with the long-handled brush, which usually has the bristles on the side." This is taken from Mr. Gossard's tip published in the March 1 issue of the NEWS LETTER.

Geo. P. Hoffman, Meridian, Miss.

Writing from the U. S. Pecan Field Station on March 11, he says: "Because of heavy rains and resulting water filling of the tree holes, planting was delayed until noon March 8th. Since that time the program of our work has been very satisfactory. Unless further handicapped by unfavorable weather, planting should be completed within ten days, or by March 25th.

"Our trees are fully dormant, air and soil temperature low, and conditions generally reasonably favorable for late transplanting.

"Requests have been sent to several nurseries of this and adjoining States for information leading to our obtaining four trees of a variety of such new and or less common varieties of pecans as we might want to plant in the variety orchard."

FRUIT DISEASES

J. B. Demaree, Albany, Ga.

"Since there has been no rain during the past two weeks the bacterial disease of Monantha vetch has made no further progress and, in fact, some vetch fields which were slightly to moderately affected are now improving," he reported March 18. "Austrian peas have deteriorated some on account of Septoria and powdery mildew.

"As the result of an inquiry sent to Prof. Ralph E. Smith, a letter has been received from Mr. Albert Etters, Ettersburg, Humbolt County, Calif., a grower of Monantha vetch seed, who says that there is a disease prevalent on Monantha vetch in the seed growing area of Humbolt County and it becomes serious during years of considerable rain or in areas where the crop makes a rank, thick growth. He further states that the disease attacks only Monantha vetch. While the information received is not definite, I suspect the disease Mr. Etters described is the same that caused our failures here this year, as all Monantha vetch seed distributed from Albany, Ga. was purchased from Ettersburg, Humbolt County, Calif.

"Tung trees injured by the low temperature of last month have recovered considerably. One orchard near Albany where it was thought at one time that all terminal buds were killed, was visited again this week and it was found that about 25 per cent of the terminal buds have recovered and are unfolding. In another older orchard even a greater percentage, perhaps 75 to 80 per cent, of the buds are alive and contain blossom clusters."

Greenhouse Heating. "Greenhouse Heating," has just been issued as Circular 254 in the Department's series. It was prepared by Arthur H. Senner, associate mechanical engineer, Division of Structures, Bureau of Agricultural Engineering. It contains 40 pages of text, and 26 figures, and is apt to prove quite useful at our stations. We have, of course, been interested in this subject for many years, and Mr. J. H. Beattie of our Division prepared Farmers' Bul. 1318, "Greenhouse Construction and Heating." Mr. Senner states that a survey of greenhouses showed that many heating plants were not properly installed and thus did not function efficiently.

Doctor Taylor Talks to Staff. We persuaded Doctor Taylor to join us at the staff meeting on Monday, March 27, and he told us something of the early investigations, personnel, and organization of the horticultural and pathological work of the Bureau. He is, of course, the Division's contribution to the Bureau. The genesis of the present fruit handling, transportation and storage project, for example, was in the practical problems he encountered in the overseas shipment of apples and pears for display at the Paris Exposition in 1900. Of course, he was a very young man then--and is yet, for that matter.

FRUIT AND NUT PRODUCTION

H. L. Crane, Albany, Ga.

"During the week the trees in the cooperative spraying and pruning experiment in the Barnwell Pecan Groves were measured and pruned," he writes March 18. "A rosette control experiment was laid out in the orchard of the Albany Peach and Pecan Company. The work of getting the rosette control experiment in the Bennett-Cox orchard started was begun this week.

"This experiment consists of 16 plots of from 12 to 20 trees each. In order to get a measure of the amount of rosette in this orchard, each tree has been carefully described. Now all dead wood is being pruned cut and weighed. Pictures are being taken of representative trees in each plot before and after pruning. Samples were taken again for chemical analysis of pecan shoot types.

"On Friday I went over all of our cover crop plantings on the station farm to observe their condition and the prevalence of disease. Since March 1st, there has not been much rain and the weather has been cool. I was greatly surprised to find that Monantha vetch was recovering from the disease which had killed the tops of large areas. Areas which appeared dead and brown on March 1st are now green. The Monantha vetch has sprouted out below the dead portions of the plant and unless attacked again by this disease, promises to make a fair to good cover crop. Austrian peas have been seriously injured by fungous diseases and look mighty sick."

TRUCK CROP DISEASES

Wm. D. Moore, Charleston, S. C.

Reporting on April 1, he said: "Weather conditions have been very unfavorable for plant growth during this week, due principally to low temperatures and strong dry winds. The surface soil has become too dry for seed germination, consequently the recently planted fields have very poor uneven stands. The low temperatures have caused considerable damage in some sections from damp-off. I was called out this week to examine one field of beans that showed about 90 per cent loss of plants from Pythium root rot. In most cases, bean plants appear to be in good condition but in almost 100 per cent of the fields practically all the plants are developing root rot at a rapid rate. Unless we get sufficient rains within the near future to start new growth, it is possible for us to get a poor general stand throughout this area."

"Most potato fields show more than 75 per cent stand at this time," he wrote March 25, "and bean fields also show a fairly even germination.

Radio Messages. We are in receipt of a letter from the War Department Message Center announcing a revised classification for messages routed via radio, effective March 1. The revision involves, so far as field stations are concerned, the cancellation of the former "Rush" classification, "Priority" taking its place. The new classifications are:

Priority - used in connection with messages to be given precedence over all routine and night messages waiting to be sent or delivered. The transmission of another message will not usually be interrupted to send a priority message, but priority messages should be cleared within one hour after receipt at any radio station. When delayed beyond this time, the sender will be so notified by service message.

Routine - covers ordinary fast dispatches, customarily handled with the greatest possible expedition and delivered at once upon receipt. These take precedence over night messages and are transmitted in order of filing.

Nite. This classification covers messages the delivery of which may be delayed until the beginning of office hours the following morning.

In addition to these three classifications, another has been established, "Routine-Nite", for messages sent from Washington to field stations and filed for dispatch after 4 p.m. We are advised that many messages have been received in the War Department Message Center after 4 p.m. marked Priority, Rush or Routine when the sender's time indicates that three to five hours have elapsed since the writing of the dispatch. In view of this it was thought advisable to offer a combination classification, "Routine-Nite," provided this office is willing to place the responsibility on the War Department Message Center as to its judgment which of the two classifications should be used to transmit this message after it reaches the Message Center. If messages can be delivered the same business day, Nite will be lined out by the Message Center and the message transmitted as Routine. If delivery can not be made the same business day, the message will be transmitted as Nite.

We are further advised that "Priority" messages to points other than Message Centers are refiled with commercial companies as Full Rate telegrams; "Routine" messages are refiled either as Day Letters or as straight telegrams and "Nite" messages are refiled as Night Letters or Night Messages, whichever is cheaper.

In view of the fact that the Army Message Center and the Naval Communication Service maintains only a skeleton force on duty after the official closing hour, sufficient only to handle traffic for their own departments, we have been requested to file radio messages far enough in advance of the official closing hour so as to enable them to be sent out in time that the Army-Navy wire may be closed promptly at 1:00 p.m. on Saturdays and at 4:30 p.m. on other days. Radio messages, therefore, should be sent in prior to 4 p.m. (prior to 12 on Saturdays). Telegrams, of course, may be sent any time.

ADMINISTRATIVE NOTES

Automobiles For the information of the staff in general, we quote below the general restrictions during the Fiscal Year beginning July 1, 1933, on purchase, maintenance, operation, and repair of Government-owned motor-propelled passenger-carrying vehicles. Section 3 of Title II of the act making appropriations for the Treasury and Post Office Departments (applying to us, also) for the fiscal year ending June 30, 1934, and for other purposes, reads as follows:

"Sec. 3. No appropriation available for the executive departments and independent establishments of the Government for the fiscal year ending June 30, 1934, whether contained in this or any other Act, shall be expended:

(a) to purchase any motor-propelled passenger-carrying vehicle (exclusive of busses, ambulances, and station wagons), at a cost, completely equipped for operation, and including the value of any vehicle exchanged, in excess of $750, unless otherwise specifically provided for in the appropriation.

(b) For the maintenance, operation, and repair of any Government-owned motor-propelled passenger-carrying vehicle not used exclusively for official purposes; and 'official purposes' shall not include the transportation of officers and employees between their domiciles and place of employment, except in cases of medical officers on out-patient medical services and except in cases of officers and employees engaged in field work the character of whose duties makes such transportation necessary and then only as to such latter case when the same is approved by the head of the department or establishment concerned. The limitations of this subsection shall not apply to any motor vehicles for official use of the President, or of the heads of the executive departments.

(c) For the maintenance, upkeep, and repair (exclusive of garage rent, pay of operators, tires, fuel, and lubricants) on any one motor-propelled passenger-carrying vehicle, except busses and ambulances, in excess of one-third of the market price of a new vehicle of the same make and class and in no case in excess of $400."

It should be noted that sub-section (a) does not carry the 10 per cent exception as to maximum unit price provided in the 1933 Agricultural Appropriation Act and applicable to that fiscal year; also that sub-section (c) decreases from $500 to $400 the maximum which may be expended per unit for maintenance, upkeep and repair.

Purchasing Gas in State of Ohio. Claims for refund on motor fuel tax in Ohio must be accompanied by Motor Vehicle Fuel Form 4a, executed by dealer at time of purchase, the Tax Commission of Ohio rules. Employees of the Department who purchase gas in Ohio should make the usual endeavor to obtain tax exemption through the presentation of the standard exemption certificate. Failing this, pains should be taken to secure from the dealer an executed Form 4a--in addition, of course, to the duplicate receipts required by General Accounting Office.

ADMINISTRATIVE NOTES

Franking Privilege. In general, the use of the penalty label or franked envelope is limited to sending through the mails free of postage matter relating exclusively to the business of the Government of the United States. This includes, according to Bureau of Plant Industry Memorandum No. 338, dated March 2, 1928:

Official Correspondence. Letters relating to the business for which the employee received his appointment. When an employee writes to a private party on official business for information of value to the Bureau, he may inclose with his letter an official envelope properly addressed to himself to cover the reply.

Publications issued by the Department. Also publications issued by State agricultural colleges or experiment stations containing valuable information on pertinent agricultural subjects, to persons asking for information or conducting experiments within the scope of the employee's work, when accompanied by a letter of transmission signed by the employee. Publications sent under frank, of course, must not contain written notations such as "Compliments of the Author," etc.

Penalty envelopes or franked labels properly addressed to the employee may be sent to publishers for mailing copies of publications containing information of value to the Bureau and for which no charge is made; and penalty envelopes may be furnished to persons in possession of public documents for use by them in returning such documents to the Bureau.

Registered Mail.-- An employee whose permanent station is Washington, D.C. may, while temporarily absent therefrom, register mail, writing on the label over his signature "Temporarily absent from Washington,D.C."

We are not permitted to use the franked label or penalty envelope for the general distribution of bulletins of stations, colleges, or other organizations; to distribute commercial, political or religious matter; in buying or selling products for individual farmers or dealers; in sending for catalogues, price lists, etc. for farmers; in sending out notices of meetings of organizations of farmers or business men, or of State, county or other fairs; in soliciting membership or funds for the support of any organizations, or for relieving such organizations from paying postage on matter issued in their interest and which is properly chargeable with postage; or in connection with the promotion of any work other than that for which the employee is appointed. With the exception of single books and public documents, the penalty privilege outside of Washington, D.C. is strictly limited to packages not exceeding four pounds in weight. All mail matter which is admitted to the domestic mails of the United States free of charge for postage is entitled (by reason of special postal arrangements) to pass free of postage to Canada, Cuba, Mexico, New Foundland (including Laborador) and Panama. Do not fail to put postage stamps on other foreign mail!

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The OFFICE OF
HORTICULTURAL CROPS AND DISEASES
SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF HORTICULTURAL CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R

The official organ of the Division of Horticultural Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.

John A. Ferrall, Editor

This NEWS LETTER is for distribution only to employees of the Division, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Horticultural Crops and Diseases. The reports of field workers, of course, represent their personal opinions and are not necessarily the official and final word on the subjects which are discussed.

Vol. V. Washington, D. C., May 1, 1933 No. 9

THE FOUR BILLIONS. Careful statistical checks indicate that the present annual value of fruit and vegetable crops is something more than two billion dollars, and that the value of land, buildings, and equipment (exclusive of land used for annual vegetable crops and which may be shifted to other uses from time to time and so is not included) will more than match that total. As the watchdog of this four billion dollar industry, the Division naturally has problems in plenty. Our work is covered by 15 main or "master" projects and, say, 600 minor lines of investigation, many of which involve no separate or exclusive expenditures as they are carried on along with work on major projects.

The difficulty is that many of these so-called minor lines of investigation are just as important in their way as our major work, and so it is distressing to realize that when cuts are made for economy's sake, theirs are apt to be the heads to fall. Incidents come up from day to day to emphasize the tragedy of this. I have in mind right now a small project costing us about $7,000.00 a year. A suggestion on a single point of technique, based on results secured in connection with the little bit of work that has been possible, enabled a producer to put up a satisfactory and marketable product after he had spent some $60,000.00 in trying to work out the problem for himself. Another producer lost $200,000.00 through engaging in the large scale packing of varieties not adapted to that use. All right, you might say, we'll retain this work. But that is just it--practically every piece of research work has such potentialities for dividend production. No matter what we discard, we are quite likely killing a goose capable of producing golden eggs.

FRUIT AND NUT PRODUCTION

A. D. Shamel, Riverside, Calif.

"During the past week there has been an unusually heavy drop of small lemons that were set during the past winter," he writes on April 3. "For the most part this abnormal drop seems to have occurred in orchards which were in the path of one or more of the violent 'northerns' that struck southern California from time to time last fall or winter, and where there was considerable resulting defoliation of the trees.

"Furthermore, in one nearby orchard the temperature has fallen to 32° F. or lower more than 60 times thus far this season. It is likely during this rather continuously cold period that many of the small fruits were affected to such an extent that they have finally dropped upon the advent of warm weather. The weakening of the trees through loss of leaves and the damage to the small, tender fruits from the frequent low temperatures may explain the drop to some extent at least."

George F. Waldo, Corvallis, Ore.

Writing early in April of a trip to the Gresham and Woodburn districts to determine the prospects for the crops of small fruits and to observe the recovery being made from the freeze of last December, he says: "In the loganberries we found that most buds show some injury from the freeze, usually the growing point, which would be the terminal of the fruiting lateral, being often killed. However, the injury does not usually extend very far into the bud and it usually appears normal except for some darkened tissue at the base of the bud.

"The canes also show some injury in the cambium region, particularly at the base of the canes. The bark also is often split or rather loose. However, most buds are opening up with new leaves appearing quite generally along the cane. With the plants in this condition, probably the injury will not be very noticeable until the crop begins to mature.

"In the Marshall strawberries there seems to be considerable recovery as most crowns are now producing new leaves and an examination of the crowns shows that there has been fruit bud differentiation since the freeze. Rudimentary inflorescences are appearing at the base of the inflorescence killed by the December freeze, and side buds also are showing fruit bud formation. The condition of the crowns indicates that the fruiting season will be somewhat later than normal and probably extending over a longer period.

"Ettersburg 121, grown largely in the section north of Salem, is almost a complete loss. Very few live crowns are appearing."

FRUIT AND NUT PRODUCTION

W. W. Aldrich, Medford, Ore.

"On April 8 and 9, the weather was cooler, with frequent snow flurries. On April 8 blossom opening was checked. At 1 a.m. on April 9, the temperature dropped to 25° in the colder orchards, with the record minimum at 23.5°. With changing direction of wind, a high ceiling and little temperature inversion, it was a difficult night to heat the orchards. In view of the low funds of the growers, the Weather Bureau forecaster suggested that growers with a limited oil supply should not smudge. As a result, not more than 10 orchards were heated. Many Bartlett, Bosc and Anjou blossoms that were showing the white of petals had the pistils and ovules killed, but with the heavy bloom there was probably no commercial injury. The low dew point (29) favored complete bud killing rather than russeting.

"On the night of April 9, the clouds cleared at 11 p.m. and smudging was necessary for several hours. Heavy clouds after 2 a.m. allowed reduced smudging for the remainder of the night. It was difficult to estimate the injury occurring during the second cold night. At the Medford Experiment Station the air temperature near the orchard dropped to 25° the first cold night, but heavy smudging kept the orchard air temperature up to 29° and usually up to 30°. The second night the check station temperature (air temperature near the orchard) dropped to 27.8°, but the orchard air temperature was kept between 30 and 31°. During the first night the 13 acres required the burning of 1700 gallons of oil, and the second night required 1200 gallons."

He had written on March 10: "During the week the blossom buds swelled considerably so that they became large and conspicuous. It was found that blossoming points could be counted very readily and much faster than during the blooming period. It is hoped that by counting the blossoming points now, rather than when the blossom clusters have expanded, that the large amount of necessary counting can be done more quickly and therefore more cheaply.

"It was observed that pear roots in the "One Irrigation" plot had made a great deal of new growth during early March, while the roots in "Frequent" had made no growth. This difference cannot be explained, and may be a chance variation. Very shortly additional root observations will be made by digging up one cubic food of soil under several trees in each plot, and noting the amount of new root growth."

FRUIT AND NUT PRODUCTION

Atherton C. Gossard, Spring Hill, Ala.

"Monday afternoon Mr. Parson and I left for Biloxi, Miss. to set up the new pecan rosette experiment in the orchard on the Dantzeler Lumber Company's Biloxi Farm," he writes April 1.

"Sixty trees, twelve plots of five trees each, were selected, with adequate guard trees between those in each plot. Detailed descriptions were made of each tree selected. Photographs were taken of two trees out of each plot of five, representing the extremes in each plot. The dead wood, and there was considerable of it in most of the trees, was pruned out; then the pictured trees were rephotographed. A portion of the bark on each tree trunk was scraped and each trunk diameter measured. Then the chemicals selected for use were applied to the soil under the trees which were to be treated in this manner."

C. E. Schuster, Corvallis, Ore.

"A little better than 50 miles up the Columbia river from Vancouver, and a few miles up the river in the mountains, we found a fair filbert planting this week," he reports April 1. "This is pretty well on the east side of the mountains and at such an elevation that when we were there considerable snow was still lying in the brush where the sun's rays did not strike direct. While the bearing was reported as fairly good, it was practically impossible for the owners to get the filbert crop unless they picked the nuts direct from the tree, on account of the inroads of blue jays. In general, blue jays seem to be a much more serious problem to the Washington growers than to the growers in the Williamette Valley.

"It seems quite evident that the DuChilly variety is susceptible to more trouble in the trunk and in general growth habits than is the Barcelona. Several things are occurring about which we know little or nothing.

"There seems to be a rather widespread but limited or variable amount of winter killing in walnuts, especially in the low land orchards, where terminal buds have been killed up to 50 per cent in the lower parts of the tree. In addition to this, there seems to be an excessively large amount of dead wood or dead tips in the trees. We have examined quite a few orchards and as far up in the tree as we have examined, this dead tip condition ranges from 10 to 100 per cent loss or death. Dr. Miller is working on this problem to see if he can find any causal agent."

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

Edwin Smith, Wenatchee, Wash.

"Although the R. A. C. C. is slow in making loans to growers, dormant spray is being applied," he writes on April 10. "The trees are being held back by the cool, cloudy weather which has prevailed with some bright periods during the past week. The temperature range has been between 22° (Longview, night of April 9th) and 64°, with some rain and snow on the mountains." On April 3, he had written that several former field men are being employed by the R.A.C.C. Mr. Fred De Sellem is in charge of the R. A. C. C. field force for north central Washington.

"Spring house cleaning and renovating fever struck the Wenatchee station the first week in April and what was once one of the neatest laboratories in the United States has, under Dr. Gerhardt's directions, taken on the 1933 aspect of advanced neatness and good order. The table for the battery of condensers along the west window has been widened and lengthened, with changes in the water pipes serving this table and with the addition of drain pipes and sing to serve the condensers. These changes will add to the elbow room in the laboratory and through the elimination of makeshift tubing for condenser waste water will assist greatly when distillations are in full force. Dr. Gerhardt also has added to his office some shelves for books and publications.

"Inspection of Delicious and Delicious sports is again in progress. Variations in quality are very difficult to associate with altitude. In general the flavor in Delicious from West Bar, Rock Island, Wenatchee and Leavenworth has been very disappointing. More variation in flavor may be attributed to maturity than any other factor. The flavor of Starking, Richared and Shotwell is disappointing by its absence. These apples come the nearest of being 'neutral' in flavor of any fruit grown. Their texture is wonderful, and in this respect surpasses the parent variety."

W. R. Barger, Indio, Calif.

Discussion his work on dates at Indio, he writes on April 14: "From March 15 to April 13, 68 lots of fruit were tested for moisture and samples preserved for sugar analysis. This fruit was from both the 1931 and 1932 crops and came from various storage temperatures. Deglet Noors are in fair condition after 18 months at 5°. Concerning the drying of fruit after storage: Very little drying occurred in the ice cream cabinet, and at 75° 40 per cent humidity, dates in ordinary cellophane dried 6 to 7 per cent in a month, while fruit in moisture-proof cellophane dried 2 to 3 per cent. Fortunately moisture-proof cellophane does not completely stop drying, for sufficient drying to prevent mold is desirable.

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

W. R. Barger (continued)

"The Valley date growers have recently selected a committee headed by Mr. Robbins Russell to form the California Date Exchange. This Exchange is to have the power to accredit packinghouses, establish grades, fix wholesale prices, foster research and handle advertisement, to be paid for out of a retain from sales of not to exceed one cent a pound. The Exchange is not to operate unless 90 per cent of the crop is signed up for three years, but thereafter withdrawals are allowed annually. If the volume under control goes below 85 per cent on the fourth year, the Exchange will disband. Members are made up of packinghouses. Growers join the Exchange through packinghouses. Each packinghouse selects its board members, eight members making up the Exchange Board, and no house, regardless of volume of fruit, will be allowed over four members on the Board. This is certainly an advancing step in the organization of the date industry. The California Date Growers, with over half of the crop, have signified their willingness to join the Exchange.

"Date pollinating has filled the cultural calendar for the past four weeks, but it is about over now and many of the stems of the first bunches have grown out four to five feet from the palm trunk. Cold weather held back the start of blooming, but after the start of spathes came out rapidly, making a short blooming season....Grapefruit bloom came out rapidly and was not as prolonged as usual. The fruits are now about the size of peas."

C. O. Bratley, New York Market Pathology Notes.

"A striking case of copper-wrap injury on Anjou pears was observed this week," he reports April 4, "while taking the final notes in storage on fruit from the SS CARRILLO experimental shipment. All of the test fruit had been packed in copper-oil impregnated wraps. At each inspection of the fruit since its arrival in November, increasing amounts of the injury have been noted. Usually the cooper injury takes the form of dark brown dots scattered indiscriminately over the surface of the fruit. At the February inspection it was observed that some of the affected areas of the skin were quite solidly so and in the shape of an oval or crescent. At the time, this peculiar form of the areas was attributed to the manner in which the fruit was packed against each other in the box. However, at the present examination several fruits were found which clearly showed that the major part of the injury occurred beneath the blue colored monogram or stamp on the wrap. On some of the fruit the outline of the stamp was plainly traced on the skin. The oval or crescent shapes seen in February were segments under the blue colored circle on the wrap. It may be that the blue ink used in printing the wrap is toxic to the epidermis, but because the injury has the exact appearance of copper injury, it seems more likely that the dye either frees the copper or makes it more toxic."

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

H. C. Diehl, Seattle, Wash. Report of April 1, 1933.

"Discussion with responsible individuals, among them H. D. Locklin, horticulturist at Puyallup, and my own observations permit the following summary of growing conditions:

"(1) The season at the present time is two weeks behind the normal schedule, which would bring the beginning of the strawberry harvest to about June 10. Of course the weather prevailing for the next two months will have a strong effect upon this condition of vegetation.

"(2) Strawberries in Western Washington have been damaged extensively especially in the Southwestern Washington areas. Roots and crowns have been killed outright in many cases. The concensus of opinion is a strawberry crop not over 50 per cent of the average. The three and four year old plants and plants on light soils have been particularly hard hit.

"This crop reduction corresponds closely to reports from the Oregon districts. In a sense, it is a blessing because the price level for frozen strawberries, which will be fairly well cleaned up soon, may be favorably affected. There certainly was an over production in prospect, if the whole present acreage were packed. Last year, of course, much fruit was never picked and older fields are being plowed under now.

"An interesting sidelight on the grower psychology is the fact that Mukai, the outstanding Japanese grower, characterized by conservatism and shrewdness, is expending his new plantings, because he believes that 1935 will be a banner price year for frozen strawberries. This is not a unanimous opinion, however, and some believe that the Marshall acreage in the Northwest is definitely due to decline because of shifting consumer demand, which seems to be side tracking preserves and jams. Part of this may be related to the lessened buying power; part, some believe, is a definite change in outlet.

"(3) Cuthbert raspberries will show only about a 50 per cent crop, and seem to have been injured more severely than the Antwerp or Marlboro varieties. Of course, the acreage of the latter constitutes only about one fourth of the total raspberry land. The frozen Cuthbert raspberry packs will be cleaned up by summer time.

"(4) Evergreen blackberries are generally so prolific that estimates of damage are now merely guesses. The opinion seems to be that there will be from 65 yo 75 per cent of the usual crop.

"(5) Deciduous shrubs and lawns suffered considerably throughout the Puget Sound area, although the damage in Portland was even greater.

"(6) I have heard of no diminuition in sour cherry crop."

FRUIT DISEASES

J. B. Demaree, Albany, Ga.

"During the first week of this period," he writes of the March 25-April 1 activities, "pecan trees in the main scab control experiment were pruned, girth measurements taken, and zinc sulphate at the rate of ten pounds per tree applied. Zinc sulphate was also applied to trees in the inter-bureau cooperative block in the G. M. Bacon orchard at DeWitt. In each of these orchards the zinc sulphate was broadcast on the surface of the ground under the limb spread and within a radius of five to six feet of the tree trunks. This work is not considered as experimental, but is designed as a practical treatment for curing pecan rosette.

"Three days of the week were devoted to applying zinc sulphate to experimental blocks in the Bennett-Cox orchard near Albany and in the G.M. Bacon orchard at DeWitt. The most extensive rosette experiment is being conducted in the Bennett-Cox orchard. There, about 200 rosetted pecan trees are being used. All trees except the controls will be treated with zinc sulphate by various methods of soil treatment and spraying."

John E. Dunegan, Fayetteville, Ark.

"Warm weather has continued the entire week and the apple buds are developing rapidly," he reports on April 1. "Considerable time was devoted to perfecting the details of the spraying experiment and it is anticipated that the first application (cluster bud) will be applied during the coming week." He had written late in March that mature apothecia of Sclerotinia fructicola were observed during the week on peach and plum mummies; and added, in connection with observations on tomatoes: "While census of the tomato acreage now is being taken over the Ozark area, local canners say it will be approximately the same as last year when 45,000 acres were planted to the crop. Price of canned tomatoes was up to $150.00 a car in the last month, local canners report. They are contracting now (March 25) for acreage over their trade area for 1933."

M. A. Smith, Ozark Fruit Disease Laboratory.

"From our observations to date of orchards in Greene, Christian and Lawrence counties, it appears that, barring a late freeze, there will be a good crop of early and late apples in this section," he writes under date of April 1. "Dormant spraying was mostly completed last week. In some early varieties delayed dormant applications have already been made. At the present rate of bud development, we shall apply the cluster bud spray to the apple scab experimental plots late this week or early next."

BULB INVESTIGATIONS

Double Daffodil. There has been some question, it appears, as to whether the famous old Double Van Sion could come back. It has been shunned to some extent because of its tendency under certain conditions to turn green, and to have the trumpet split up into forms of little decorative value. Dr. David Griffiths, however, is an optimist on this subject and thinks that proper handling will solve the difficulty.

But he points out that this means something more than the production of high-class stocks--there is a great deal to be said regarding the forcing quality of the bulbs after they have been produced in such excellent quality. Flowers may become malformed, he states, as the result of bad conditions in the flats, and he adds that during the forcing season just closed Double Van Sion has been in blossom from New Year's to the middle of March. Some of the lots came in early, due to storage treatment, and were perfect in every way. Other lots which blossomed later became infested with the tarsonemus mite, which is particularly injurious to this variety as well as to Goldenspur.

The Double Van Sion is a good forcer, he points out. "The variety is early and forces easily. It is amenable to cold storage treatment and will produce perfect flowers from such treatment. Late in the season it is possible to flower it, like other early varieties, in 30 to 35 days from planting. A lot of six bulbs were planted January 7, for example, Flowering started February 13, and a splendid showing made by the 17th. The pot was placed on the bench as soon as planted, carried at 55-60°F. at night and up to 75° in the daytime until the opening of the first flower; then in a living room automatically controlled at 70-72°F. in the day and 60° at night until the 17th. Nine of the 12 flowers from six bulbs were open then. The bulbs were from Bellingham stocks carried in ordinary commercial storage. Similar bulbs potted February 5, blossomed similarly, under the same treatment, in 27 days. The stems were from 7-12 inches long, rather short for daffodils for cut flowers, but this makes a better pot than if the stems were longer. Of course it is realized that daffodils are not sold much as pot plants, but is there any reason why they should not be, especially when the stems can be shortened like this and they need greenhouse space but about a month from the first of the year? We talk about daffodils for Easter and we pot them up in September when better pots, at least, can be made of them when planting takes place in February. Why?

"Double Van Sion is one of the best subjects for this kind of treatment, but Sir Watkin, King Alfred, Victoria, and Golden Spur behave similarly. They can be brought into flower in 30-40 days from potting after January 1, and need no preliminary rooting period. Of course, bulbs for this kind of quick, late forcing (as indeed for any forcing) must be of good quality and be kept in good condition up to potting." The Double Van Sion, Doctor Griffiths insists, possesses a maximum of the characteristics of a first-class commercial daffodil. Can it come back? In his opinion it has bever actually been away!

BULB INVESTIGATIONS

In a note from Bellingham, Wash. on April 12, Doctor Griffiths says that the season there is unusually late--cold, wet and gloomy. The winter has been a severe one, with the mercury hovering around zero as early as December and again dropping low in February. "It is claimed," he writes, "that perennials have suffered more than in the past 40 years. Losses are reported in some sections. Some things have gone out on the station, but our losses have not been severe. It is too early yet to evalue the losses properly but the indications are that even Lilium Parryi and our seedling and other shallow lily material has survived. All shallow plantings are mulched. Some injury is reported to daffodils in some sections but in this general upper Puget Sound country they have not suffered. On the station the daffodils entirely unmulched escaped with negligible injury. What did occur was caused by the February freeze which seared the leaves of the early varieties such as the King Alfred. Iris has escaped with leaf injury from the February freese--even Muscari suffered leaf injury this year... about half the daffodils are in blossom now, and the earliest of the tulips are showing color."

TRUCK CROP DISEASES

Wm. D. Moore, Charleston, S.C.

"This week has been spent in making field counts of root rot, mosaic, and bacterial leaf spot on my experimental plots," he reports April 15. "All plantings are now up to a good stand, which is somewhat in advance of similar conditions a year ago. While there is a heavy root rot infection this season, most of the damage seems to be due to Pythium. It is quite likely, however, that the other organisms usually associated with bean root rot will appear in destructive form within the near future."

POTATO INVESTIGATIONS

W. C. Edmundson, Greeley, Colo.

"Sunday about four inches of snow fell," reads the report of April 11. "The snow contained .15 of an inch of moisture. Sunday night the temperature dropped to 12 above zero.. The soil remains very dru, but it is believed that we will receive more snow this month, for the big snows of the year generally occur in April." He had written earlier, April 3, that the Greeley section remained dry in every sense of the word! The water supply for some towns and cities was becoming quite low. It was reported then that some people in Cheyenne, Denver and Colorado Springs were having wells drilled for a private water supply. "Alfalfa ground is too dry for plowing," he wrote. "Fields that were in cultivated plots last year can be plowed or disked but there is not sufficent moisture for germinating beets, grain, alfalfa or crops that are normally planted at this time. Some farmers are waiting, hoping that there will be sufficient moisture for germination. Other growers have seed beds prepared but are withholding this seed, hoping for more favorable soil conditions. We are well up with our spring work and have seeded some grain and alfalfa. We, also, have some ground that is prepared but not seeded."

POTATO INVESTIGATIONS

Yellow-fleshed Hybrid potato.

A certain farmer had grown discouraged, strange to say, and decided to dispose of his farm and try his luck in the city. He called in a high-pressure real estate man and asked him to do his best to dispose of the place to good advantage. A day or two later the real estate man came back to show the farmer a copy of the advertisement he proposed to use in the papers, offering the farm for sale. "Read that again!" exclaimed the farmer, as he listened with growing amazement to what the real estate man read. After the second reading he shook his head. "I don't think I'll sell," he said. "I've been looking for a place like that all my life, but until you read that description of my farm, I didn't know I had it!"

I feel a bit like that myself in reading the announcement the Press Service sent out concerning some of the new potatoes resulting from the breeding work of Dr. C.F. Clark, associated with Dr. F.J. Stevenson and, of course, Dr. William Stuart, in charge of our potato investigations. I am particularly impressed with the novelty turned up in the shape of a new yellow-fleshed potato, a hybrid of northern and native South American potatoes, which has given phenomenal yields in preliminary trials in Maine. Doctor Clark secured this hybrid by crossing and it combines the characters of several North American varieties and two yellow-fleshed potatoes, one a native variety from Cesta Rica and the other a yellow-fleshed variety from true seed obtained from England. Although the flesh is yellow, the hybrid tastes like a white potato.

The interesting point, of course, is that the yellow-fleshed parent has given the new hybrid the much desired vitamin A, usually scarce in potatoes, while the American varieties represented in the parentage have handed down the standard shape, disease-resistance, yield, and cooking quality. It yields heavily in the preliminary trials but, of course, has yet to be given rigid field and cooking tests. In fact, Doctor Clark and his associates haven't bestowed a name on it yet.

The discovery that the yellow flesh which is characteristic of some of the native South American potatoes is associated with the presence of vitamin A has given added importance to the value of the new varieties (there are several of them) which have this type of flesh. Several introduction of yellow-fleshed potatoes have been made but invariably they produced low yeilds of small, rough tubers, with deep eyes; and they proved very susceptible to many of the common potato diseases in the United States. However, they had the high vitamin content and this is the thing Doctor Clark has bred into a high qaulity variety. Years of patient work went into the development of this new yellow-fleshed potato--known officially, for the present, as No. 44428.

ADMINISTRATIVE NOTES

Furlough A number of inquiries have been received concerning the status of unused legislative furlough on April 1, when the furlough system was abolished in connection with the new 15 per cent salary deductions. Under the legislative furlough plan, of course, employees were entitled to 2 days a month--or a total of 18 days from July 1 to March 31. Some of our workers had not taken all of this leave.

For their information we wish to explain that the Comptroller has recently decided that where deductions have been made from the compensation of an employee on account of the legislative furlough, and the furlough not taken, it may be taken when convenient prior to June 30, 1933. Under the 15 per cent deduction plan we go on a 15-day-a-year annual leave with pay basis and from April 1 on we receive credit for annual leave at the rate of 1-1/4 days a month which will accumulate on a calendar year basis. This means that 11-1/4 days of this leave will accumulate during the calendar year ending December 31, 1933--1-1/4 days a month from April to December 31.

Applications for furlough and for annual leave with pay will be considered on this basis.

American Production or Manufacture, etc. The Bureau's accounting office is suspending reimbursement claims for cash purchases of supplies because of the absence of certificates from the dealers to the effect that the articles, materials or supplies are of the growth and production of the United States, or of the manufacture of the United States.

We have requested authority to permit the substitution of a certificate by our field employees for the dealers' certificates where small cash purchases are made when the employee is in a travel status, or if it is necessary to pay cash for field station purchases. This request is now being considered by the Solicitor, but since considerable time will probably elapse before we receive his decision, certificates from the dealers must still be secured and submitted with all claims for reimbursement of cash purchases, as well as with the Form 1034 vouchers. If the Solicitor finds it practicable to approve our request, we shall notify you promptly.

Puerto Rico, if you please! Information has been received that Senate Joint Resolution 36 has been signed, changing the name to Porto Rico to Puerto Rico.

ADMINISTRATIVE NOTES

The 15 per cent Pay reduction. Under the terms of an Executive Order issued by the President, a straight reduction of 15 per cent in the salaries of all Government employees, regardless of salary rates or terms of employment, was placed in force, effective April 1. So far as employees under appointment and paid from Washington are concerned, our Business office will make the deduction on the regular office payrolls beginning April 1. The reduction, however, applies to persons employed under letters of authorization, whose salaries are paid in cash for which reimbursement is claimed in expense accounts (Form 1012) or listed on payrolls (Form 1013) prepared in the field and sent to us for payment, and the following instructions are given by Mr. Swartz for handling the reductions:

(1) Employees for whom vouchers are submitted to Washington for payment.-- The standard Form 1013 is to be used, of course, and the gross salary listed as usual. In the second column under "Deduction" should be written "15 per cent compensation deduction" and in it you enter the amount of the reduction. The "Net Amount Paid" column will show the actual amount to which the employee is entitled. This is probably clear enough, but a somewhat involved point is that the gross salary is the amount charged to your letter of authorization because, you see, the gross amount is actually taken from our appropriation--15 per cent to be impounded in the Treasury and 85 per cent to go to the employee.

(2) Employees paid in cash for which reimbursement is claimed. This covers, of course, people employed on subvoucher receipts, and paid in cash, the receipts being included in your reimbursement account (Form 1012). These receipts must be filled out to show gross salary, the 15 per cent deduction, and the amount (85 per cent) actually paid the employee, together with the usual statement that cash payment was necessary. If you employ a man to do pruning at $2.50 a day for 4 days, say, the receipt shows four days at $2.50, $10.00, less 15 per cent, $8.50. Your account (letter of authorization) will be charged with $10.00, but you will pay the worker only $8.50, the other $1.50 (15 per cent) we must turn in to the Treasury.

While it has always been true that cash payments for labor should be limited to those cases in which cash is actually demanded by the employee, it is now doubly important to restrict such payments because of the extreme difficulty involved from the Bureau's accounting standpoint in handling impoundments into the Treasury of the 15 per cent deductions. Your cooperation in limiting cash payments for labor to the absolute minimum will be greatly appreciated--and is likely to save you money, personally as well as officially!

Vol. 5, No. 9 May 1, 1933

The OFFICE OF HORTICULTURAL CROPS AND DISEASES SEMI-MONTHLY NEWS-LETTER

BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF HORTICULTURAL CROPS AND DISEASES

S E M I -- M O N T H L Y N E W S L E T T E R

The official organ of the Division of Horticultural Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.

John A. Ferrall, Editor

This NEWS LETTER is for distribution only to employees of the Division, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Horticultural Crops and Diseases. The reports of field workers, of course, represent their personal opinions and are not necessarily the official and final word on the subjects which are discussed.

Vol. V Washington, D.C., May 15, 1933 No. 10

Nursery Stock Investigations

There is astonishingly little, if any, real duplication of work by Federal and State agricultural research agencies. We do on a national or broad regional basis those things the State stations attempt in their limited field, and, more important, we take over the problems which are too comprehensive to be handled by State agencies. One of the best illustrations of this is found in our nursery stock investigations project. Nowhere in this country, except in our Division, is there such a broad program of work on the under-stock problem. Just how important the work is can be realized by remembering that we formerly imported millions of seedling stocks for budding and grafting. We have aided American growers to replace these imported stocks with the home-grown article. We have done more than that - We have shown that certain varieties of apple, cherry, and plum seed from domestic sources are more dependable and otherwise desirable than much of the seed and seedlings formerly imported for stock purposes. A large proportion of the seed now being used by our growers is from domestic sources. The work is gaining added importance because of the quarantine regulations against foreign plant importations. One of the first things we were able to demonstrate was that seeds of certain of our American varieties produce much superior seedling stocks than others, which was to be expected, but which it was left for us to prove.

We took another step forward in accumulating evidence that poor stocks are often due to immaturity, the nurseryman being in too great haste to dig and market the plants. Having diagnosed the trouble, we hope to write a prescription that nurserymen may have criterions for maturity in the field so that they may dig their crops according to rule-- I beg pardon, prescription-- with the assurance that the seedlings are of proper maturity to survive.

These nursery stock investigations have placed the greatest importance upon quality, the production of better quality fruit trees and ornamentals, rather than greater quantities. They seek to point the way to uniformly vigorous trees, productive and adapted to various soil and climatic conditions, and resistant to diseases and insect pests. The project serves a nursery industry whose products return more than $58,000,000.00 annually to growers, this total not including the profits to brokers, wholesalers, commission men and retailers who merely buy and sell.

The possibilities for high dividends are great. A peach rootstock resistant to nematodes, for example, could be counted on to save peach growers annually several times the total cost of all of the work of our Division. Throughout the southern peach producing States, nematodes are a most serious and costly root pest in peach orchards. Recently we have found a peach rootstock immune to this pest. We are subjecting this stock to comprehensive tests to fit it for use in commercial orchards. At the same time the work with peach rootstocks has shown that seedlings of certain varieties when used as roots produce larger and more productive trees than the stocks heretofore in commercial use.

The insect, wooly apple aphis, is probably the most serious root pest on apple trees throughout the country, both from the standpoint of the nurseryman and the orchardist. While the aphid resistant stocks we have developed have not proved adaptable to all varieties of apples, we have every confidence that the work now in progress will produce other resistant stocks and so ultimately provide stocks which are not only resistant but suitable for all varieties of apples under varying conditions.

Incidentally, stocks for dwarf apple trees must be propagated vegetatively rather than by seeds. These stocks were formerly grown and sent to this country by expert plant propagators from abroad. We have worked out methods of propagating these stocks in this country.

Among ornamental plants, the results with roses, which constitute a very important genus among nursery plants and provide a livelihood for thousands of people, have been particularly important. Tests of various rose stocks have been made to determine their relative value, and a stock of our own development has proved to be superior in growth and flower production to all others tested. This stock is now being adopted by the trade.

Nurserymen each year suffer large losses in storing their plants over winter. The investigations under this project have shown that plants can be stored most successfully at about 32° F., covered with quite dry packing material. This phase of our nursery work is being stressed because of its importance to the trade, and because of the lack of definite information on proper storage conditions and treatment.

FRUIT AND NUT PRODUCTION

A. D. Shamel, Riverside, Calif.

"The Riverside Navel orange pageant to be given at Riverside on the afternoon of May 5," he writes on April 17, "has received the hearty co-operation of all citrus marketing associations and local civic organizations. It is of particular interest to us because it emphasizes the vital fact that the Department was responsible for the founding of the Navel orange industry, and for many fundamental features in the development.

"It was early decided to limit participation this year to Riverside interests or those closely connected with them, such as the California Fruit Growers Exchange, the Mutual Orange Distributors, and the American Fruit Growers, Inc. About 200 floats are being prepared that will illustrate the founding and development of the industry. Some 9,000 school children of Riverside will take part in field day exercises at the high school stadium where the parade will end, and a tableaux representing Mrs. Tibbets planting the parent trees will be presented.

"The celebration of the founding of the industry is sponsored by the Riverside Chamber of Commerce and has included the placing of a marker at the site of the surviving parent tree by the State Chamber of Commerce and the State Highway Commission, and the National Orange Show at San Bernardino where the motif this year was the planting of the parent tree by Mrs. Tibbets. The pageant is the next feature on the program."

In this connection, the publication of a booklet giving the history of the introduction of the Navel orange is planned. In fact, Mr. Shamel has already been asked to prepare the material and has submitted it for approval for this form of publication. It outlines the history of the introduction and has brief descriptions of striking features in the development of the industry, together with cultural notes. If the Department officials approve, this material will be published in the near future. We feel that it is a contribution of some lasting value and likely to be of considerable interest to a large number of people who are interested in this subject, not only in the Southwest, but in foreign countries where this variety is grown to a greater or less extent commercially.

Incidentally, Mr. Shamel gave us some interesting figures on the money value of the Navel crop recently. The figures were included in a personal letter not intended for publication, but they really are impressive enough to come out into the open. From 1910 to 1932, he tells me, the f.o.b. returns to the California Navel orange growers who ship through the California Fruit Growers Exchange were $393,568,489.40! Applying this rate of return to the portion of the crop marketed by other agencies, we have a total of about $525,000,000.00 for this period. And the 100,000 acres of orchards now planted in California are going to top this record in the future.

FRUIT AND NUT PRODUCTION

Charles L. Smith, Austin, Tex. (Texas Pecans)

"Flower clusters for pollination work on some varieties were bagged in the Pearce orchard" says the report of April 16. "Romberg went to Denison to start the pollination experiments in Mr. Kemper's grove. Pollen began shedding on Nelson and Texas Prolific varieties on Monday, April 10. Smith made a trip to Arlington to inspect transplanting and seedage experiments in Gray's nursery, and also to demonstrate bagging and pollination technic in pecan breeding to some pecan growers. Nine men of the group will carry on crossing of pecans this season under our directions...

"On the 15th and 16th, heavy frosts damaged the young orchard trees on the station, especially the Success variety. In a large percentage of these trees the bark is split just above the ground. It is impossible to estimate the damage as yet. There is danger of infestation of these injured trees by borers, but precautions are being taken to keep them out. The Burkett trees are apparently not appreciably injured and are making good growth.

"The low temperatures at Austin slowed up the growth of new shoots on trees and the consequent development of pistillate flowers. Most varieties, however, will have a heavy blossom this season. We have had a heavy infestation of hickory shoot-borers, especially on the Stuart variety. We have been able to find only a few overwintering nut case-bearers, even though they were plentiful in the last generation last fall."

For the week of April 17-22, he writes: "The week was spent in carrying on pollination work at the Austin Station and at Kemper's grove at Denison. The cold weather of the 15th and 16th apparently slowed up the development of flowers at Denison, as there seems to be a much greater difference in their earliness as compared to those in the Austin territory than there was last year."

Dahlias go to Chicago Fair. According to the Southern Florist the Central States Dahlia Society is making definite arrangements to hold the first international "all-dahlia" show in the annals of dahlia culture--at the Chicago World's Fair this year. Invitations are being sent to over 3,000 individuals, societies, trade papers, newspapers, amateur, professional and commercial growers in all parts of the United States, European countries, Canada, Australia, Mexico, Bermuda, and also some South American countries to participate either in person or through growing of dahlia tubers in the World's Fair grounds or in a private dahlia garden of the society in Chicago. Over 1,000 entries are expected, and over 25,000 blooms of the latest and best dahlia varieties will be arranged for and on exhibit for seven days, September 15-22, 1933..."

FRUIT AND NUT PRODUCTION

Milo N. Wood, Sacramento, Calif.

"Early walnut varieties began to bloom in some of the districts about three weeks ago," he reports April 15. "Up to the present time it is evident that many of the orchards will bear light crops because of the dichogamous conditions prevailing. Growers are much concerned about the prospects of greatly reduced crops on some of the walnut varieties because of dichogamy. It has been necessary to spend practically the entire time in the field conducting the walnut pollination experiments and the dichogamy investigations. The pollination experiments are being carried on along somewhat more extensive lines than hitherto in order to secure additional information necessary for making recommendations to growers....

"Injury due to the December freeze is now becoming marked. This injury has been slight in walnut orchards south of Sacramento. Recently, however, a frosty night caused much harm to the foliage on some of the early blooming walnuts in portions of the San Joaquin Valley.... In a previous report it was stated that the fruit buds of the almonds appear to be injured in some sections by the freeze and the drop would be heavy. It is now clear that considerable damage was done by the freeze and many of the almond blossoms which apparently set fruit finally dropped."

W. W. Aldrich, Medford, Ore.

Writing April 24, he states: "At the Medford Experiment Station production research was confined to counts of bloom and growing points in the 'time of irrigation' plots, measurement of new shoot growth, examination of root observation pits and measurement of trunk circumferences. Limited amounts of available soil moisture during late June and early July in 1932 did not seem to affect the amount of bloom in 1933. Root growth, which was rapid between March 1 and March 21, continued to be rapid during April. Many rootlets made 6 to 7 centimeters of growth between March 21 and April 21.

He had reported on April 17: "I have mentioned in previous reports that 3-year-old Seckel trees showed some splitting of the trunks, due presumably to winter injury during January. A recent visit to the orchard showed that Anjou trees three years old and with Anjou trunks were showing large dead areas with thin sheets of bark peeling off. On some trees this type of winter injury extended throughout two and three-year-old wood and also well out the vigorous 1932 growth. Some trees showed no injury whatever, while others had all bark killed to the ground.....During the week Bartlett blossoms were collected and pollen dried. On Saturday 11 bagged limbs, carrying about 100 blossom clusters each, were hand pollinated with the Bartlett pollen. Ten similar limbs covered by bags were left unpollinated to determine self-fruitfulness, and ten unbagged and unpollinated limbs were tagged to determine fruit set from open pollination."

FRUIT AND NUT PRODUCTION

Geo. P. Hoffman, Meridian, Miss.

He writes on April 15 that the collection of 800 strawberry plants, consisting of several varieties, received from Dr. George Darrow of our Division, has been received and planted.

"It is interesting to note that the test planting of paperwhite narcissus bulbs would seem to indicate that the narcissus might make a good crop here," he continues. "The round bulbs which we have are very firm, remarkably free of 'grass' and appear to have a minimum number of centers or divisions. The bulbs are yet green, but the crops are slowly ripening.

"The strawberry growers, shipping from the Marion section in the vicinity of the pecan field station, seem to be moving an unusually good crop of berries, but serious loss has resulted because of unfavorable weather condition and red spider."

H. L. Crane, Albany, Ga.

"During the month of March, only four rains fell, with a total of 5.05 inches, 3.50 inches of which fell on March 20th," he reports under date of April 22. "Due to these conditions, Monantha vetch recovered from the attack of a bacterial disease and made a fine growth during the latter part of March and the early part of April.

"On April 5th the rains started and continued every two or three days. This condition has caused this bacterial disease to spread so that it had killed about 50 per cent of the Monantha vetch by April 18th. Even though disease has been serious, our cover crops are the best we have ever had. Yields of Monantha vetch ran as high as 9 tons green weight per acre. This year common and hairy vetch will give the greatest yields.

"The pistillate bloom is now out on pecans so that one can see them readily on some varieties, and it appears to be very spotted, both as to orchards and as to varieties. Growers expected to see a heavy bloom this year since the crop was so small last year and many are disappointed at the light showing at this time. The Stuart variety is very late in starting growth and is not far along enough to tell what the bloom will be, but it is doubtful if it will be heavy since this variety was the one most severely injured by the drouth of 1931.

FRUIT AND NUT PRODUCTION

George F. Waldo, Corvallis, Ore.

"Activities during the past week have largely been confined to strawberry breeding, sowing of seed and planting of some odds and ends in the way of strawberries and brambles," he writes April 22. "A trip was made to Hood River in company with Mr. Pickett on Friday, April 21. Strawberries showed considerable injury due to the December freeze, the proportion being about the same as with the Marshalls in the Williamette Valley. Probably not more than half the crop can be expected in that region."

B. G. Sitton and J. L. Pelham, Shreveport, La.

"Indications at the present time are that there is a good prospect for a crop of nuts in this territory, taking all varieties and all orchards into consideration," says the report of April 22, "as there is as much formation of pistillate flowers as has occurred in many years. Most of the orchards are showing quite vigorous growth and plentiful formation of staminate flowers, altho it is much too early to attempt any estimate of the set, as in many orchards pollination has not occurred."

The April 15 report said: "Rainfall for the week, .68 inch. On the station turned under cover crop, which is the best we have ever had. Average yield for cultural block is little over 10 tons green weight. Hairy vetch has shoed a superiority over Austrian winter peas this season. Soil samples were taken for nitrate nitrogen analysis."

Atherton C. Gossard, Spring Hill, Ala.

Report for week ending April 15: "The first part of the week was spent in the field. A second measurement of the shoots in the growth rate experiment has been made. A large number of new shoots were ready for measurement than were ready at the time of the first measurement, six days previous. The first application of fertilizer has been completed. Trees in the demonstration experiment, leaf scorch experiment and in one of the pruning experiments, were included in this application. It would have been better to have applied this fertilizer 10 days earlier. The time required to set up the new rosette experiments, difficulties which were encouraged in obtaining American manufactured fertilizers at Mobile, which is a seaport, and the early starting of growth of peach trees this year made it impossible to apply it before growth was under way.

"We have had an over abundance of rain the latter half of this week. Friday afternoon and evening there was a very heavy downpour. The temperatures for the week have been somewhat low in comparison with those two and three weeks earlier."

WALNUT GROWING COOPERATION

There is an old theory that the banana is the best illustration of the value of cooperation, the explanation being that no banana ever leaves the bunch without getting skinned. But it seems that the banana has some competition from the walnut if one may judge by the statement C. C. Thorpe, general manager of the California Cooperative Walnut Growers' Association, presents in the January American Bankers Association Journal.

"Scattered throughout the walnut producing districts of California are 43 affiliated packing plants," he points out, "also cooperatives, where unshelled walnuts are received from grower members, graded, cleansed and packed. These country plants are models of efficiency; their equipment, built in units, is all uniform; and the bulk of our business, 85 to 90 per cent, is confined to the packing, selling and shipping of these unshelled walnuts....

"It is possible for a cooperative when controlling more than 75 per cent of a given product economically to increase the demand substantially. Where an agricultural industry is not so cooperatively organized, there is no feasible way of increasing demand to absorb an increase in production except through a drastic reduction of prices, often to levels which hurt the industry, as is the case today with such items as wheat, corn, cotton, tobacco, beans and livestock.

"Eighty-seven per cent of the walnut growers in California are members of this association and deliver all of their product to it. Thus the cost of advertising and sales promotional work is distributed over almost the entire industry--over a large dollar volume. While this cost of increasing consumption or demand is a big item--one which will run to over half a million dollars this year--when it is divided among our 7,000 growers it becomes a small individual charge....

"Our net payments to growers have averaged, over the past five years, 1.6 cents per pound more than the average price received by independent growers, or a premium of 7-1/2 per cent. But this is not the big factor. The advantage of cooperation spreads largely over the entire industry. In other words, the whole price structure is several cents per pound higher than if there were not one strong, dominating organization in the field which could strengthen the price, and at the same time take steps necessary to increase the demand in harmony with the continuous and rapid production increase....

"It is my opinion that if other agricultural industries were as completely and efficiently organized as the walnut growers of California, American farmers would need no gifts nor even any loans from the Federal Treasury."

FROZEN PACK EXHIBIT

One of our workers who out of the kindness of his heart sent a friend a small fruit tree last year, inquired about its progress and is still puzzled over the reply. He wrote: "You remember the little cherry tree I sent you last year--how did it turn out?" And the reply, on a postcard, reads: "It's a peach!"

Believe it or not, it is the fear of misunderstanding which induces us to use the soft pedal in discussing frozen pack. The results are so encouraging that given full publicity they might result in a disastrous boom, for it is mighty easy for a producer to lose a lot of money quickly in attempting to handle the wrong varieties--even with the best methods. When our friends utter words of praise, we feel compelled to pass them along--the words of praise, not the friends--to NEWS LETTER readers. In the present instance we are thinking of the kind words uttered by the Press Service in connection with the exhibit we fixed up here a month or so ago to show with actual preserved fruit the progress being made.

"Exceptionally promising varieties of strawberries and peaches for preserving by the frozen pack process were shown in the frozen and defrosted forms in a special exhibit at the Department of Agriculture," says the notice. "U.S.660 strawberry seedling proved to be the outstanding berry of the lot and was among the best the frozen pack workers have ever preserved. Besides the strawberry and peach exhibits, the department showed certain raspberries, dewberries, sweet cherries, grapes, nectarines and figs. Although not on exhibit, peas, lima beans, asparagus and rhubarb were also frozen in department experiments during the last season. The exhibit was prepared by the Division of Horticultural Crops and Diseases.

"The fruit exhibited had been stored in different types of containers, and had been frozen at different rates, but it had been stored at the same temperature, about 15° F. Most of the fruit for this exhibit was grown in the vicinity of Washington, D.C., although some was shipped from the department's frozen pack laboratories in Seattle, Wash. and Fresno, Calif. All the fruit was packed last summer. In addition to varietal tests to discover what variety of peaches or strawberries preserves best under the frozen pack method, the department studied the rate of freezing to determine whether slow or more rapid freezing gave the best results." It was found that cherries and peaches are generally better when frozen slowly; there is usually not much difference in vegetables frozen rapidly and those frozen slowly. In general, however, a fruit to be successfully frozen packed must be put up in air-tight containers.

A number of similar exhibits have been displayed by staff members on the Pacific Coast during recent weeks, each of which has received enthusiastic comment from observers and the press. The Pacific Coast frozen pack work has been conducted by H. C. Diehl and J. A. Berry at Seattle, Wash., and by W. T. Pentzer and C. E. Asbury at Fresno, Calif., while the Eastern work has been done by J. M. Lutz, Dr. J. S. Caldwell and H.H.Moon.

POTATO INVESTIGATIONS

W. C. Edmundson, Greeley, Colo.

"Our dry weather has been broken," he reports April 25. "Rain fell last Wednesday, Thursday, Friday and Saturday---.86 of an inch of rain being recorded. Heavy snows fell in the mountains, five feet of snow being reported at Estes Park and along the Poudre and Platte River water sheds. Many of the main highways were blocked with snow, but at Greeley the precipitation mostly fell in the form of rain. The highway from Greeley to Cheyenne was blocked for two days. It is quite possible now that more water will be stored in the reservoirs for late irrigation. Most of the reservoirs are only partially filled, the water having been used east of Greeley for direct irrigation."

TRUC K CROP DISEASES

Wm. D. Moore, Charleston, S. C.

"Considerable mosaic and bacterial leaf spot have developed on beans during the last few days, though this condition does not seem to be general," he writes for the week ending April 29. "Some evidence of magnesium deficiency is appearing in many fields and actual damage is already seen from this trouble on potatoes. No estimate can be made at this time as to the probable damage that may be expected on these two crops from this deficiency, since weather conditions during the next few weeks will be the main limiting factor. Parasitic diseases in general are about normal for this season of the year."

Grapefruit Those of our workers who are interested in the increased consumption of the grapefruit, will be interested in the news that two of our leading Press associations have lately been giving some attention to the matter. The item by the Associated Press is in the nature of a brickbat rather than a boquet and under the heading "YOUR EYES WILL BE RED" intimates that the appearance in California of the State's first acreage of pink grapefruit is likely to add to the number of cases of "pink eye". This, of course, is but a sneering comment on the grapefruit's courage in fighting back when attacked. This California grapefruit, however, is said to yield pink juice as well as pink flesh.

The second item, from the United Press, tells us that Dr. B. L. Hooper of Lincoln, Neb. has invented (and displayed at the California State Dental Association conclave) a tiny umbrella attached to a spoon. This opens automatically as the spoon plunges into the grapefruit, effectively catching any squirts of juice; and it snaps shut as the spoon is raised to the mouth, thus avoiding contact with one's nose!

Care of Injured Orchard Trees. Sleet and snow storms in late March, injuring orchard and other trees, brought forth numerous inquiries concerning the best methods of handling such trees, and the Press Service has distributed some very helpful instructions. The Department's experts point out that young and fairly vigorous peach, apple and pear trees will stand even severe breakage without serious permanent injury. Even if most of the limbs on these trees are broken, new growth will form quickly and if handled carefully, can be used to rebuild satisfactory trees. Limbs broken at some distance from the trunk should be cut smooth at point of breakage in order to leave the framework for the development of new branches. If the breakage consists of splitting at the trunk, the limbs should be cut off, leaving the wound as smooth as possible.

"Such trees usually will throw a vigorous growth of new shoots at the point of breakage," the item states. "These shoots are likely to be too numerous for satisfactory development. The most satisfactory shoots for rebuilding frame-work branches should be selected and others should be pruned out before the next growing season. At that time, stubs of branches should be cut back to where a strong shoot has formed, in order to facilitate healing. If the shoots are growing too close together, removal of some of them during the summer may be desirable.

"With old trees in a low state of vigor, salvaging is much more difficult. If large limbs on old trees are split down it is questionable if it is worth while to try to save them by bolting or other surgical methods. Such branches are likely to be too weak to produce satisfactorily. The wounds left by the removal of such branches should be smoothed up and painted over, preferably with a disinfectant paint, provided the remainder of the ree is in sufficiently good condition to be worthy of salvage. An excellent paint for this purpose can be made by mixing Bordeaux powder (available on the market) with raw linseed oil. Add enough powder to make a thick paint. This will aid in preventing the entrance of wood rot.

"Where old trees are so badly broken that practically all of the fruit producing area is removed, it is questionable if attempted salvage of the trees is worth while. The rebuilding of such old trees from the trunk will require practically as much time as it would take to bring into bearing a young, nursery tree. Large wounds resulting from such breakage , with relatively little top left on the tree to aid in the formation of callous over the wounds, means the almost certain entrance of woodrots, so that such a tree, even if rebuilt would have little value. It is probable that such completely broken, old trees should be removed from the orchard. If trees in those localtions are particularly desirable, young trees may be set, although frequently the growing of young trees where old ones have been removed is difficult."

First-aid methods which tree owners may apply to highway, park and ornamental trees broken and injured by storms, are summarized as follows:

"First, safeguard life and property by taking down any large limbs which threaten to fall.

"Repair trunk injures first, for decay there is more dangerous than in the branches. Make jagged wounds smooth and flush by sawing off rough protruding fragments and chiseling away splintered wood. The margin of the wound should be shaped with a sharp knife to make it regular in outline and where there are large cuts it is preferable to make the outline of the wound somewhat pointed at the top and bottom to prevent dying back of the bark cut off from the sap flow. Paint the smoothed and shaped wound to keep out decay.

"Draw split crotches together and bolt them securely, putting the bolts directly through the wood. A block and tackle may be used to raise limbs back to their places. If there is much strain on the bolted branches, use one or more cables above the bolt to strengthen the work. Fasten the cables to eye-bolts passed through the limbs. Do not wrap cables about the branches. Multiple-strand galvanized wire cable is satisfactory.

"Saw broken limbs flush with trunk. If a broken branch is more than two inches in diameter, first cut it off about a foot from the trunk to relieve the weight and then make a second cut close to the trunk. Then paint the wound. To leave any pruning stubs greatly retards healing and they are an added source of infection.

"Paint wounds with asphalt paint or Bordeaux paint, which latter may be made by stirring ordinary Bordeaux powder into raw linseed oil, using equal parts of the powder and oil. If convenient, putting a narrow border of shellac on the margin of the wound is helpful as it prevents drying.

"In repairing trees be careful to avoid damaging them further. Lower large limbs with a rope to prevent possible injury through bruising the tree or breaking branches. Wear rubber-soled shoes or an old pair of rubbers to avoid damaging thin-barked trees. After completing the work, watch for any defects that may appear."

Primpt treatment of injured trees is necessary to help them recover and to lessen danger of decay.

ADMINISTRATIVE NOTES

Lost Checks. Many times employees in the field report the loss of checks to the employee in charge of the field station and have him write to Washington. As the Disbursing Office will not institute tracing procedure upon the request of any one but the payee, it will expedite the matter if a letter is prepared for the signature of the person to whom the check was drawn and submitted to the Washington office in triplicate, signed in dupicate. The Disbursing Office requires that the letter be signed by the person to whom the check was drawn so that in case the check has been cashed, the signature can be compared.

The same procedure is necessary in the case of a lost check made out to a firm.

Reduced Rates. Transportation. As stated in previous issues of the News Letter, the railroads are giving from time to time in some cases reduced first-class rates for specific periods and between specific points. Wherever possible, employees should take advantage of these reduced rates, both because of the substantial reduction it will permit in traveling expenses, as well as to meet the requirements of the General Accounting Office, which has advised that such reduced rates must always be secured where possible.

Photographic Equipment, etc. It has come to our attention that occasionally the provision of letters of authorization prohibiting the purchase of photographic equipment has been interpreted as applying to photographic supplies as well. By photographic equipment is meant articles of a non-expendable nature, and specifically such articles as cameras, tripods, developing tanks, photographic lights, etc. Expendable photographic supplies, such as films, developing paper, photographic plates, etc. may be purchased under letters of authorization in the field where necessary. Cable releases and bulbs are also considered as supplies and may be purchased under letters of authorization.

Where time will permit, it is recommended that photographic supplies be purchased through the Washington office in order that we may take advantage of the low contract prices, but where such supplies are needed for immediate use, there is no objection to their purchase in the field under letters of authorization.

Telephone Directory. It is important that we have our telephone directory information correct and up to date and for this reason we are anxious to have members of the staff who find their names listed incorrectly (or omitted) in the telephone directory notify Mr. Schoenhals promptly.

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The OFFICE OF
HORTICULTURAL CROPS AND DISEASES
SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF HORTICULTURAL CROPS AND DISEASES

S E M I -- M O N T H L Y N E W S L E T T E R

The official organ of the Division of Horticultural Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.

John A. Ferrall, Editor

This NEWS LETTER is for distribution only to employees of the Division, and the material contained in it is of an informal and confidental nature, and is not to be published without securing the prior approval of the Division of Horticultural Crops and Diseases. The reports of field workers, of course, represent their personal opinions and are not necessarily the official and final word on the subjects which are discussed.

Vol. V Washington, D.C., June 1, 1933 No.11

We are in the Army now! We of Uncle Sam's Civil Service family, whatever may be our tasks, are a good bit like members of the regular army. People are apt to make heroes of the volunteers, but in the long run they depend upon the regulars to see things through to a satisfactory finish. In our research work in particular we have the soldier's ideal--workers putting in their best efforts without hope of outstanding rewards, or any reward at all for that matter, as aside from a very few these workers are paid less than similar positions would command in commercial organizations in normal times.

Outlining the purposes of the work under the Agricultural Adjustment Act, George N. Peek said recently: "To agriculture it should be said that the purpose is not to do something for the farmers. It is to enable farmers to do something for themselves.... It is to enable them to do what all other producing social groups do and that is (approximately and in the long run) not to produce and send to market more goods than consumers at home and abroad want and have money to pay for." That might very well stand as a statement of the purpose of the investigations of this Division too.

Rather than increasing the total production of a crop, we are concerned with increasing the production per acre of high quality products on the land fitted for certain crops, and in getting these products into the hands of the consumer in the best possible condition and at the lowest price affording a reasonable profit to the grower. The more nearly we can make production dependable, the easier it will be to control it should control of production be necessary.

Investigations of this type are actually more important in bad times than in good as they assist in reducing production costs to the point which may very well mark the dividing line between profit and loss for the grower. Such work, for example, will in many cases prevent pests or diseases from taking the entire crop. To abandon or curtail agricultural research thus not only means curtailment of production but may quite likely mean the destruction of the industry concerned. If we took away the disease-resistant varieties and control methods developed by our Division alone, tomatoes, lettuce and cabbage--to use a few outstanding illustrations--could not be grown profitably in several regions of the United States.

Before we developed a fungicide for the control of brown-rot of the peach, practically the entire crop of an important peach-growing section was destroyed by the rot in bad seasons, and such fruit as was salvaged and shipped was very apt to rot in transit--or, worse still, in the hands of the consumer. Discontinuing such work means not curtailment of but wrecking production.

The perennial canker disease of apples now threatens the existence of the apple industry in such regions as the Hood River, Ore. and portions of the Wenatchee, Wash. districts. To drop, or seriously reduce the work which is safeguarding this industry, would certainly result in heavy losses in these districts. In addition, lessening our vigilence would quite likely permit the spread of perennial canker to other important apple-growing sections, causing growers to lose not thousands, but actually millions of dollars each year.

Abandon control methods, and the pecan industry would be in serious danger of destruction from pecan rosette.

The whole future of the cranberry industry probably hinges upon the success of our work in controlling cranberry false blossom.

It has been estimated that disease-prevention methods are saving $3,000,000.00 annually for the Citrus fruit growers of this country--and at a cost estimated to be less than one-tenth of a cent a tree per annum.

The total annual savings to fruit and nut growers of the United States through the disease control and prevention methods worked out in this Division has been estimated at $65,000,000.00.

Research is unquestionably the most profitable of Uncle Sam's investments, and, incidentally, the profits go where they will do the most good--directly into the hands of the people whose taxes pay for the investigations.

FRUIT DISEASES

Leslie Pierce, Vincennes, Ind.

"Up to the end of the period covered by this report," he writes May 6, "the experimental apple plots had received three spray applications and the peach plots two. No spray injury was showing on the foliage of any of the trees sprayed with copper sprays. Wind and hail injury on apple foliage had been aggravated by the sulphur sprays. It was evident at the time the third application was made in the apple orchard that the crop on Delicious had been entirely destroyed by scab. Turley, Stayman Winesap and Grimes were showing only a trace of scab infection at this time. It is very evident, judging from the amount of scab infection showing on Delicious that this variety should have been sprayed at least five times before the full bloom stage was reached.

"In a letter dated May 2d, Mr. Frank T. Street, manager of the Kentucky Cardinal orchards, Henderson, Ky., reports that in unsprayed and poorly sprayed orchards in his section scab has destroyed the entire crop on all susceptible varieties. According to his statement, verified by specimens mailed under separate cover, the blossom clusters and the foliage surrounding them showed an extreme wilted appearance resembling the wilting of plants induced by extreme summer heat. Specimens of this type of scab injury are being pressed and will be mailed to Washington."

J. R. Cole, Shreveport, La.

Report of May 13, 1933: "There is a very good crop of nuts in most of the orchards around Lafayette and Whiteville, but since all of the varieties except Stuart are scabbing, the growers are going to have difficulty in saving the nuts. In one orchard in Louisiana, the Pabst, Frotscher, Moneymaker, Van Deman, Schley and Success are all scabbing severely--in fact there is over 90 percent of scab on the new leaves of these varieties but as yet I have been unable to detect any on the nuts. This grower was unable to spray on account of economic conditions, and it seems as tho' his crop on these varieties will be a total loss.

"At Lafayette, I am getting very good results with scab control and it looks now as tho' the pre-pollination spray was very effective, as there is about three times as much scab on the new leaves of the trees which did not receive the pre-pollination spray as there is on the ones which did receive it. As yet, none of the nuts are showing scab infection."

He reports that on a trip early in May he was surprised to find so much interest in the Government's work on pecans....all the growers seem to think that if we can control rosette we will have done a wonderful thing for the pecan industry.....

FRUIT DISEASES

Howard E. Parson, Spring Hill, Ala.

"Pollen was shedding on Schley pecans April 27," reads his report on May 6. "Notes were taken in the scab control plot on initial scab infection of the leaflets April 28 and 29. From 41.5 percent to 69.7 percent of the leaflets within reach from the ground were infected; 49.6 percent of the leaflets in the tops of the trees in the latter plot were infected. Twenty percent of the twigs were found having scab lesions. Most of the twigs had only single lesions and these were small. May 1 notes were taken on the initial scab infection of the leaflets in the leaf scorch plot. From 75.3 percent to 85.8 percent of the leaflets were found infected. Part of this heavy scab infection is due to the rainy April we have had. The official record at Mobile for this April is 14.12 inches rainfall, whereas the average for the month is 4.63 inches. This April is the second wettest on record since the establishment of the Mobile weather bureau."

"Anxiety is felt more this year for success in pecan scab control than any other since this laboratory has been established," he wrote on April 22. "This is because it is known that there is an abundance of overwintering twig lesions, there is a crop of nuts although not bumper, and scab is already well started with additional infection periods occurring April 19 and 22."

Paul W. Miller, Corvallis, Ore.

May 6th, he wrote: "It now appears evident that a short walnut crop is in prospect for the Pacific Northwest. This prospective shortage appears to be due in a very large measure to a killing of the pistillate flower bearing buds during the cold weather which occurred in December, 1932. In a Mayette walnut orchard in the hills near Sheridan, Ore., a 75 percent reduction in the normal crop is in prospect due to a killing of the buds and twigs by the December freeze. This orchard is located at an elevation of about 1,000 feet above sea level and the thermometer went down to 7 degrees above zero during the cold weather of last December. Fully three-fourths of the catkin buds in this orchard were killed. In this same planting, trees were found with the crown and large basal roots injured. While this is a case where extreme injury occurred, practically every Willamette valley orchard shows varying degrees of injury from the freeze."

"During the past week," he wrote April 15, "attempts were made to isolate the walnut blight pathogene from lesions on fallen leaves which had been on the ground over winter. Ps. juglandis was isolated from approximately 10 percent of the attempts made, indicating that the pathogene is still viable in some of the lesions on fallen walnut leaves. Further studies on the relation of moisture and temperature to the infection of walnut leaves by Ps. juglandis were also carried on during the week...."

FRUIT DISEASES

A. J. Riker, Madison, Wis.

"Attempts have been made to examine the oxidation-reduction potential of crown galls and normal tissue," he writes on May 6. "Tomato plants were used for this purpose. Considerable difficulty has been experienced in obtaining accurate readings of this plant material, which has reduced considerably the accuracy of the work. Fortunately there is such a large difference between crown-gall and healthy tissue that great accuracy is not required. The grown-gall tissue was found to have a higher oxidation reduction potential than the normal tissue. We are speculating on the significance of this difference."

On April 22 he wrote: "Following the determinations made of the influence of various cell-stimulating bacteria on the oxidation-reduction potentials of certain media of known composition, similar trials are being made with extracts of tomato and of carrot. Early determinations indicate that the oxidation-reduction potential of these plant extracts is much lower at the beginning than that of artificial media. However, the bacteria have reduced the potential still farther in the first few days that the trials have been running."

J. B. Demaree, Albany, Ga.

"Some laboratory work was done and field observations made on pea and vetch diseases," he reports April 8. "Ascochyta pinodella was found abundantly this week, for the first time, in some Austrian pea fields. Diseases have done considerable damage in all pea fields examined except one or two. Powdery mildew is prevalent in most fields. Some fields have only mildew, while others may have a combination of mildew, Ascochyta, and Septoria. The symptoms of all three diseases are similar; that is, dying of the lower leaves and blackening of the lower part of the stem when mildew or Ascochyta is present. While I have not had an opportunity to examine many fields planted to peas this year for the first time two such fields examined were practically free of disease. On the other hand, all fields that have grown peas for a number of years in succession are now badly diseased.

"There will be a moderate to heavy production of both staminate and pistillate blooms on about all varieties of pecan in the Albany, Ga. district. The pistillate blossoms of the earlier varieties such as Moneymaker and Waukeena have expanded and are apparently ready to be pollinated. So far, no pollen has been found shedding.

"Farmers have been very busy this spring and from all reports increased considerably their acreage of cotton, corn, tobacco and peanuts. Armour and Swift fertilizer companies report a big increase in demand for fertilizer as compared with the past two years."

FRUIT DISEASES

H. F. Bergman, East Wareham, Mass.

"Most of the time this week has been spent in taking water samples from bogs to determine the oxygen content of the water, and in examining leaves to ascertain if any injury has occurred, and the nature of it, as a result of winter flooding," he writes from the Cranberry Disease Laboratory on May 13. "From examinations of leaves made so far it appears that the cells of the leaves from deeply flooded vines are in very poor condition as compared with those shallowly flooded or not flooded. The leaves from some of the experimental vines from which oxygen was excluded all winter are in the worst condition. The subsequent development of the vines will be followed to determine effects, if any, on flower and fruit production.

"Cranberry buds are growing slowly so that although there have been some nights when the temperature on some bogs has gone down to 26-27° F., it has not been necessary to flood the bogs as the buds are too small to be injured at such temperatures. Growers however are beginning to watch the thermometer and be ready to flood the bogs in case of severe frost."

John C. Dunegan, Fayetteville, Ark.

"I have examined a number of orchards between Fayetteville and Bentonville during the week and it is apparent that in most orchards the crop is going to be much smaller than was previously thought," he reported under date of May 13. "I presume the snow storm of April 15 caused more damage than was first apparent, even though the temperatures did not go below 32° F. At any event, whatever the cause, many young apples are dropping from the trees at the present time."

About this snow storm: He had written April 15 that a week before they were busily engaged in applying the cluster bud spray application to the apple plots--and April 15 the orchard and surrounding country were covered with six to eight inches of snow! Fortunately the temperature did not go below 32° F, and the snow was followed by a warm rain so that most of it had disappeared by noon April 16. The combination of apple trees in practically full bloom and a heavy snow storm is rather unique.

Considerable rain fell during the week of May 6, and he wrote that conditions were ideal for the development of the apple scab fungus. "Numerous scab lesions have appeared on the leaves of non-sprayed check trees in my experimental plots," he said, "and I believe we are going to have enough apple scab in the plots to give the new copper fungicides a thorough test this season. On May 3 the first carlot shipment of strawberries was made from Mansfield, Ark. A car was shipped from Farmington May 4, and one from Fayetteville May 5. The price paid for the Fayetteville berries was reported to be $2.00 a crate."

FRUIT DISEASES

John C. Dunegan, Fayetteville, Ark. (continued)

"I have received reports that leaf curl is very severe in the Nashville, Ark. section this year," he says in his report for the week ending April 22. "The majority of the growers failed to add a fungicide to their dormant sprays. Mr. Amstein, the Extension Horticulturist, informed me that he considered 90 percent of the leaves affected in the orchards he examined, and he felt the disease would do considerable damage this season. Strangely enough, he failed to find leaf curl in the American Fruit Growers' orchard at Nashville, while it was prevalent in adjacent orchards. No dormant spray for leaf curl was used in the American Fruit Growers' orchard, but the trees have been thoroughly sprayed during the growing season with a combination of Zinc-Lime and Flotation sulphur for the past few years. This is an interesting observation but, of course, it cannot be concluded that the use of Zinc-Lime - Flotation sulphur combination was responsible for the lack of leaf curl."

TRUCK CROP DISEASES

Wm. D. Moore, Charleston, S.C.

Reporting under date of May 13, he writes: "Weather conditions have changed from very favorable to extremely unfavorable for plant growth during this period.

"There has been but two light rains, neither of which was sufficient for immediate needs. In the meantime, temperatures have been abnormally high. In many cases the potato fields have been badly damaged and other crops, particularly tomatoes, are showing damage from a lack of water. The bean crop is likewise suffering from insufficient water, but will not show the losses that will be seen in the other crops. Potato and bean harvest is now under way, the peak of the movement probably being reached during the coming week.

"I have spent all of my time during this period--the week ending May 13th--in taking field notes on my bean plots and harvesting the first planting.

"Mosaic and bacterial leaf spot are the two most severe diseases in the field at present, though little damage has so far appeared on the harvested product. Due to the lack of moisture in the soil, together with the high temperatures, little damage has been experienced so far from root rot on maturing plants.

FRUIT AND NUT PRODUCTION

C. E. Schuster, Corvallis, Ore.

"As it turns out," he says under date of May 6, "this undoubtedly is going to be one of the worst seasons for pollination experiments that we have had. So many of the buds we have are dead, and it is difficult to find material enough so that more than two flowers can be put under a sack.

"Some early pollination was carried on this week, and in spite of all precautions taken, about one-third of the sacks had no bloom under them at all. Where the terminal bud has been killed so regularly, it cuts down the chances of obtaining a good number of buds under the sacks."

B. G. Sitton and J. L. Pelham, Shreveport, La.

"The entire week, May 1 to 6, was speint in modifying leaf areas in connection with fruit setting studies. There is a very good set of pistillage flowers on all varieties in the Skannal orchard where part of the work is being carried on. In the Fullilove orchard, the flowering was scarce on the lower branches but was rather plentiful on the upper branches. Apparently, pollination is about complete, and there seems to have been sufficient pollen to pollinate all flowers and the pollen shed was spread over several days so that there was pollen available for pistils becoming receptive at different times."

W. W. Aldrich, Medford, Ore.

"The blossoms that were setting fruit became apparent during the week," he says in connection with his report of May 1. "The muslin bags were removed from the pollinated and 'selfed' limbs of Anjou. The set on limbs with blossoms pollinated with Bartlett was much greater than those selfed, but I was surprised to note how many Anjou blossoms set with only their own pollen available."

Elmer Snyder, Fresno, Calif.

Writing of budded vines on May 13, he says "A recheck was made of the number of buds growing on the new stock and varietal block at the Fresno station on May 13th. It was found that 96.92 percent of the buds put in the stocks last August were growing, and some of the buds not growing were alive and may start growth later. The growth from some of these buds has reached the top of the stake--four feet six inches above the ground."

FRUIT AND NUT PRODUCTION

A. J. Shamel, Riverside, Calif.

"Our Washington Navel orange pageant and dinner was a great success from every standpoint," he reports May 8. "It emphasized the Department's work and I think that many people saw for the first time a striking illustration of the importance of the activities that are carried on by the Department and which have been of fundamental value to the country. The Los Angeles, Riverside and other papers gave the pageant and dinner much space for several days.

"We first proposed this celebration ten years ago, the fiftieth anniversary of the founding of the Washington Navel industry, but it was impossible to carry it out at that time. This year we were more fortunate, and everything went off without a hitch with the cooperation of everyone concerned. We hear universal praise for the pageant and dinner, and I feel that considerable good was accomplised. For the first time so far as we know, representatives of our leading marketing organizations, railroads, growers and allied industries go together on a friendly basis. The largest crowd by far in the history of Riverside assembled to view the unique parade, the Mission Inn was crowded to overflowing at the informal dinner in the evening, and a very enjoyable program was presented. Best of all, little expenses was involved and our people got their minds off their troubles for a time at least."

Atherton C. Gossard, Spring Hill, Ala.

"At this time," he writes April 29, "the set of pistillate pecan blossoms seems to be quite spotted over the territory, although in general those trees which lost their leaves and put on a second set of leaves in the autumn have a much poorer blossom set than those which retained their original foliage last summer. Of our principal varieties, Schley was probably the worse injured last year and has probably the poorest set of blossoms this year... Although most of the Satsuma orange trees in this vicinity were completely or almost completely defoliated following this winter's severe freeze, they had a fair set of bloom. The foreman at Abbot's seems to feel that under such conditions a remarkably small amount of bloom has dropped and, while still dubious, is hopeful that there may be something of a crop of oranges this fall."

On April 22 he had reported: "Many pecan trees in this territory lost their leaves following the storm of last September 1, and produced new foliage in September and October. A hasty check up showed very few blossoms on these trees , whereas on some trees which retained their original foliage there is a heavy set."

FRUIT AND NUT PRODUCTION

Milo N. Wood, Sacramento, Calif.

"Since writing the last report upon the almond there have been some more frosts and considerable damage has been done on the lower lands in some districts," he writes on May 6. "In portions of several districts the set is apparently heavy at the present time. It seems however that the indications point to a crop of almonds somewhat below the average and probably this will be the case with walnuts as well.

"In many almond and walnut orchards growers have not taken the best of care or practiced the best cultural methods. A great many acres of almond orchards have apparently been neglected during the past year in the attempt of the owners to save money. It is probable that such saving is actually a loss because some of the orchards are in such a poor condition that the crops cannot possibly return profit to the growers. Most of the almonds and walnut orchards, however, have been given good care.

"The effects of the December freeze in November California are especially evident now that other live trees are in full foliage. Practically all of the eucalyptus trees, the acacia trees, and the citrus trees are dead clear to the ground. Such trees stand out in marked contrast to those having fully developed foliage at this time of year."

George F. Waldo, Corvallis, Ore.

"Evidence of the injury to strawberries due to the December freeze seems to be increasing in amount. Old strawberry fields have been in many cases plowed up and those which are remaining have many plants that are dead entirely and many more that are not blooming, and those that are blooming appear to have much less bloom than in normal years. Younger and well cared for plantings usually have a full stand of plants but the amount of bloom is estimated by growers in the best of these plantings to be only about one-third of the normal crop. Consequently it appears to me that the Marshall strawberry crop for this year in the Williamette valley and probably for the Puget Sound region, may be not more than 15 per cent of the normal crop. As previously reported, the Ettersburg 121 is practically killed out."

Writing earlier, on May 6, he said: "While on leave, taking a trip to Bellingham, Wash., and Vancouver, B.C., observations were made on conditions of strawberries and other small fruits. The freeze of last winter caused strawberries in the region south of Olympia to appear badly damaged, so severely as to affect the stand of plants. In other sections the plants look better but it appears that the amount of bloom is much below normal. Red raspberries appear to have suffered severely from the freeze in the section around Bellingham, Wash., and Evergreen blackberries also showed winter injury in the Puyallup valley."

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

Edwin, Smith, Wenatchee, Wash.

"Departure was made for Hood River on the morning of May 5th," says his report of May 15. He was accompanied by Messrs. Overley and Ryall. "The afternoon was spent making final observations on the Hood River Anjou pears for scald and decay. We have observed a skin discoloration on Anjou pears for which we have no term or designation. It occurs infrequently in fairly well defined areas as a greenish discoloration and sometimes merges into scald. We might believe that it was a scald variation if it did not occur fully as frequently in oiled wraps as in others.

"On May 6th, a conference was attended in Hood River at which were present representatives of the Oregon and Washington Agricultural Experiment Stations and of the Idaho Department of Agriculture, who have been working with the removal of lead residues. While hydrochloric acid plus salt and sodium silicate with brushes or abrasives are the two most promising solvents, our experiments have not progressed to a point where fair conclusions may be drawn. It was considered advisable to have another symposium of the investigators in July.

"Dr. Osborn and Miss Capen have completed 32 analyses since they arrived, and have 18 in progress. A change was made in the top of the flue to the hood and this has handled the fumes in good shape. They are now running the regular number of 24 samples per week. We have samples for 66 analyses ahead of them on dipping tests and today Mr. Ryall is starting a series on the washing machine which will embrace 96 samples or 192 analyses so that the work we have in hand will keep them working for at least ten weeks.

"Discussion of spray residue still takes its toll of time at the weekly Traffic Association luncheons. They are now devising a plan, the execution of which would result in having a record of the washing procedure of every lot of fruit--possibly its spraying program--the boxes to be numbered to agree with the records. This would tie up with a State control such as has been urged by Mr. Diehl since 1929 or earlier, should such a control be put into effect.

"Mr. Newcomer attended the Field Men's Association meeting on May 13, discussing sprays for codling moth control which he hopes might be removed. The session extended until 4.00 p.m. and a program was worked out embodying arsenate of lead in calyx and three cover sprays, two having fish oil, one mineral oil; one or two covers using nicotine sulphate. No second brood sprays.

"Analyses of wiped apples from the upper valleys indicate that apples having but one cover spray of arsenate of lead will have to be washed as wiping does not give the fruit a safe margin to meet the .014 lead tolerance....There have been many comments that orchards in the

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

Edwin Smith (continued)

Wenatchee district never have had the appearance of being better cared for and, incidentally, many owners say they have never felt in better physical health....The spring weather has included an unusually large number of cool, cloudy days with threatening showers. Upon the occasion of Mr. Diehl's visit, May 11-12, the valley was flooded with its expected calorific sunshine, but with this exception cool weather has ruled. The weather was not favorable for bees to work but this will probably be an assistance when it comes to thinning.

He had previously written, on May 5: "First inspection after withdrawal was made of Anjou pears on April 26. Copper injury from the copper-resinate-oiled wraps was of commercial importance only where the pears were packed wet. No injury of importance was observed where the pears were packed direct from the washing machine as in commercial practice. However, the paper was more fragile than the copper sulphate wrap so that control of gray mold spread was not so complete as with the latter. A very good control of scald was had with this wrap, whereas in the plain and copper wraps scald was severe. The oiled wraps, both with and without copper, kept pears with infinitely better appearance than the plain and copper wraps. The pears in copper sulphate wraps developed a musty flavor not attained in the copper resinate, although the latter had a decidedly distinctive odor at the time of packing. This odor disappeared during storage.

"Dr. Osborn and Miss Capen of the Bureau of Chemistry and Soils arrived on the morning of May 3 and by afternoon had nitric acid digestions of washing experiments of 'Sample E' in progress. They are very adaptable to field station conditions and we have every promise of a steady progress without washing experiments, using our equipment as they find it."

H. C. Diehl, Seattle, Wash.

Writing under date of May 3, he says: "I regret very much to report that the horticultural work at the Western Washington Experiment Station, under Harry Looklin, has been discontinued.... "The strawberry crop still promises to be only about 50 per cent of normal, but this does not necessarily imply a reduced frozen pack tonnage compared with 1932. Considering the amount of fruit which was wasted last year, the total frozen strawberry pack of some 60,000 barrels in 1932 (only slightly under 1931) may be approached fairly closely. The western packers view with some apprehension (No, No, H.C., the expression is "View with alarm!" Ed. note) the present market conditions in Eastern districts which may lead to a large Eastern frozen pack tonnage, especially if the information about the crop reduction in the Northwest is not properly weighted in terms of probable frozen pack tonnage in this region."

ADMINISTRATIVE NOTES

Sick Leave There has been some misunderstanding about the provision of the sick leave regulations which provides that "the minimum charge for sick leave shall be one-half day," and there has now been an official interpretation made, reading: "The minimum charge for absence on account of sickness shall be one-half day and additional fractions shall be charged in multiples of one-half day." This will govern in making charges for sick leave.

Incidentally, the Comptroller (12 Comp Gen. 558) has again interpreted the leave regulations as prohibiting the granting of sick leave of absence with pay to any Federal officer or employee while in a nonpay status, whether on leave of absence without pay or on administrative furlough without pay. Of course, we have understood that if we were taken sick during vacation we could not have the period of illness covered by sick leave---it was just our tough luck to get sick on our own time. The same rule applies to enforced vacations--administrative furlough, etc. And, of course, you may not be granted annual or sick leave of absence with pay at the beginning of a calendar or other leave year (some departments use calendar year in figuring leave; others use fiscal year) immediately following a period of absence in a nonpay status in the preceding year unless and until there has been a return to duty.

Send in Vouchers very promptly! Under date of May 13, Mr. Schoenhals mailed a notice to employees, especially station workers and those of our personnel who have letters of authorization, urging the necessity of submitting as promptly as possible vouchers covering any purchases already made or to be made in the immediate future. Care should be taken to see that these vouchers are complete and fully signed, with all necessary statements attached, so that we may avoid the delay of returning them for correction.

What we are trying to do is to make sure that the vouchers are here in time to receive administrative examination in our Division and the Bureau's accounting division, and be forwarded to the Disbursing Officer of the Department for the drawing of checks, these checks to be received by the merchants from whom purchases are made or employees and yourself to whom payments are due, clear through the banks and clearing houses, and be received in the U. S. Treasury to represent cash withdrawals on or before June 30, 1933--the close of the present fiscal year.

It would be well to tell merchants and others to whom you know checks for your account have been sent, to cash them as promptly as possible, so as to make sure that the checks will be here in Washington and in the Treasury Department on or before June 30, 1933.

Vol. 5, No. 12 June 1, 1933

The OFFICE OF
HORTICULTURAL CROPS AND DISEASES
SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF HORTICULTURAL CROPS AND DISEASES

S E M I -- M O N T H L Y N E W S L E T T E R

The Official organ of the Division of Horticultural Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.

John A. Ferrall, Editor

This NEWS LETTER is for distribution only to employees of the Division and the material contained in it is of an informal and confidential nature and is not to be published without securing the prior approval of the Division of Horticultural Crops and Diseases. The reports of field workers, of course, represent their personal opinions and are not neces sarily the official and final word on the subjects which are discussed.

Vol. V. Washington, D. C., June 15, 1933 No.12

Fruit and Nut Production. Writing from Sacramento, Calif. on May 20, Milo N. Wood says: "Because of the importance of walnut pollination experiments in determining practical methods of increasing yields and overcoming enormous losses resulting from dichogamy, emphasis has been placed upon this particular project for several weeks. A number of improvements have been made in the technique used in the past. It is expected that the amount of work done in artificial pollination this year will benefit the growers to the extent of thousands of dollars. While much of the work is still in the experimental stages, it is clear from last year's results that there will be a great increase in yield in walnuts this season whenever the methods now worked out are applied.

"For the reason that varieties of walnuts in various districts of California behave in different ways, there still remains a great deal of work to be done in determining suitable varieties for pollination purposes. Until data have been collected to serve as a basis for the selection of pollinating varieties to be interplanted or grafted into orchards non-productive because of the lack of pollination, artificial means of pollination can be used to greatly increase the yields."

He adds that because of the weather--a very warm period following a rather cold winter, with this warm period followed by a cool spell--pollination was not entirely satisfactory even in orchards containing several varieties and it was necessary to resort to artificial pollination in order that good crops might be produced.

FRUIT AND NUT PRODUCTION

Geo. P. Hoffman, Meridian, Miss. (U.S.Pecan Field Station)

Writing on June 3, he sayd: "The tree growth is quite satisfactory during this very dry weather. The insect injury previously reported is not noticeable. Our cover crops have all been planted and are slowly but satisfactorily coming up. A strip four feet wide was planted to cow peas on both sides of the tree row, dropping back three feet from the tree. Crotolaria was planted broadcast in the 16-foot space between the pear rows bordering the tree rows. The peas are up to a beautiful stand but the crotolaria is coming up rather slowly.

"Our strawberry varieties have made most satisfactory growth and are setting a good crop of "runners." ...The variety planting of white potatoes shows signs of premature ripening because of very dry weather. We have obtained remarkable growth and should gather some good suggestive data from this planting....The grape and dewberry plants in the nursery row are doing nicely and seem to be standing the dry weather unusually well.

"It is interesting to note that narcissus--paperwhite, Chinese Sacred and Soleil d'or--planted about the middle of January, withstood the low temperatures of January and February, developed very satisfactory bloom, and were ready for harvesting May 30. Our harvest of this plot was made at the same time during which October planted narcissus were being harvested in Florida. I observed with special interest that the round bulbs of the Paperwhites were of unusual firmness, have more than the usual number of ripened 'skins' and the color is of a beautiful copper brown. This planting would suggest that Paperwhites might do well here and rather suggests that Chinese Sacred and Soleil d'or varieties might not do so well."

C. E. Schuster, Corvallis, Ore.

"The past two weeks have been largely spent in fighting the weather and attempting to finish up pollination work on walnuts. To date the major portion is done, but it will be several days' work yet pollinating some late varieties....With exceptions, this has been the worst season we have ever encountered in pollination work. Winter kill is quite extensive in the buds. The storms have delayed things in every way possible, so that the season has strung out over six weeks."

He had written on May 20th that winter damage on the walnuts was becoming more evident all the time. "Considerable imperfect growth is showing from buds that were partially damaged. It is also quite evident from examination of the material that the pistils were killed in the buds in many cases. A high percentage of the material that was sacked early in the season has no fruit buds or pistils in it at all."

FRUIT AND NUT PRODUCTION

A. D. Shamel, Riverside, Calif.

"Last week I spent two days in the lemon orchards of the Chula Vista district in San Diego County," he writes Doctor Magness on May 29. "This trip was made in response to requests of the County Agent and a group of lemon growers. The particular problems that they want help upon are the selection of varieties for propagation in the work of replanting and interplanting decadent lemon orchards, methods of interplanting, and systems of pruning. Fortunately, there are some old orchards in that district that were planted from 40 to 50 years ago of both the Lisbon and Eureka varieties, in which the trees of the different strains often found in much older plantings have not been top-worked or replanted. From our experience with performance records of similar strains in the orchards that we have been studying during the past 20 years, we were able to classify the trees of the various strains in the old San Diego groves through leaf, flower and fruit characteristics. From this information, all agreed that the sensible thing to do was to select for propagation strong growing outstanding trees of the most productive strain in each variety that have survived and are still vigorous and heavy producers of good fruit. Some of the growers had been inclined to go to other districts in order to obtain propagating material, but they were convinced from our collective observations in some of the local orchards that they had not previously studied from this point of view that the plan of securing budwood from the best trees that had proved their adaptability to local environmental conditions is the best one. We saw illustrations in several orchards of strains of both varieties that had been planted or used for top-working and are very successful in certain other districts but are failures in the San Diego districts. These instances demonstrate forcibly the importance of systematic local tests of varieties and strains before they are used on a commercial scale.

"What has been said of the strain also applied to the species of rootstock, as can easily be seen in some of the Chula Vista and Escondido orchards. It is apparent that in some cases the sour orange rootstock has been a failure for lemons, particularly those of the Eureka variety, but under other conditions in those districts, particularly in deep, well-drained soils, the sour-orange has been a success with the semi-dense strain of Lisbon and in at least one instance with Eureka trees. Furthermore, the dense or semi-dense strains of each variety are more satisfactory for use on sour-orange than in the case with the open and less vigorous strains, while in the Corona and Upland districts, for instance, the open strains have been most satisfactory to date."

Cherimoya. He makes interesting comments on the cherimoya, too, in this letter, saying: "We heard of one or two small commercial cherimoya plantings that seem to have been quite successful in production and have arranged to get further information about them next fall or early winter when the fruits are on the trees. I still think from my observations some years ago in northwest Mexico that the cherimoya is worth studying

FRUIT AND NUT PRODUCTION

A. D. Shamel (continued)

and that it may be possible to obtain a productive variety or strain for this section. The universal criticism that I have run into of this fruit in southern California is that the trees are unproductive and the trees that I have seen from time to time bear out this idea. I have rarely seen a cherimoya tree with more than a dozen fruits. On the other hand, in some tropical countries that I have visited I have found large trees that were bearing 200 to 300 fruits of large size and of wonderful eating quality. I am convinced that good cherimoyas properly ripened, are perhaps the most delicious and attractive of all tropical fruits that are not now grown here. For this reason I am interested in their possible cultivation in some of our sheltered locations.

"I believe from what I have seen that the older cherimoya trees are probably as hardy as most of the avocado trees, perhaps as hardy as the orange and certainly as resistant to climatic extremes as the lemon. Their deciduous habit during the winter season is to their advantage in this matter. They are easily propagated from seed or by budding, as has been demonstrated in nursery practice here. The young seedlings and budded trees are quite tender and apparently need protection from wind, low temperatures and sunburn for several years. The lack of fruit production in cherimoya trees that has been so general in southern California may be due to self-sterility, inferior varieties, cultural practices or some cause that can be overcome with more knowledge of this fruit. I would like to see a careful study made of the cherimoya on the west coast of Mexico from all points of view, together with the introduction of carefully selected budwood from the most productive and apparently desirable of the Mexican trees, so that intelligent studies can be made of the problems that are peculiar to this fruit.

"The water-lemon plantings, Passiflora edulis, that we saw in San Diego seem to be quite productive, but owing to a lack of demand for the fruit, the growers told me that they were not profitable," he continues. "Some of these plantings are on trellises that are located midway between rows of avocado trees.

"The relatively heavy increases in avocado plantings in the coastal areas of San Diego county, Vista, Escondido and nearby districts indicate an early and tremendous increase in the production of this fruit if these orchards reach normal production. The extension of this industry in San Diego county is truly amazing even to those of us who have seen the district occasionally during the past ten years. The Fuerte is still the popular and dominant variety in that region. The orchards look to be well cared for, the trees vigorous and healthy and there is a very heavy bloom on the trees just now. The consumption of avocados will have to be increased greatly and soon to provide an outlet for the crop from these trees."

FRUIT AND NUT PRODUCTION

C. F. Kinman, Sacramento, Calif.

"You will be interested to know," he writes to Doctor Magness under date of May 24, "that the Bing trees that we examined near Yuba City last year, those sickly looking trees that had so much decay just above the union, have greatly improved in vigor due to having the earth removed so that the tree trunk is exposed to below the union. Where the soil was removed and the branches headed back to a height of about nine feet last July, the improvement is surprisingly striking. Here the large decayed area just above the union is healing over and the stunted sunburned branches have put out a heavy leaf and shoot growth, and the old spurs are loaded with fruit. While considerable of the fruit on untreated Bing trees in that orchard are doubles this year, there are almost no doubles on the treated trees that were headed back."

C. P. Harley, Wenatchee, Wash.

"Upon examination of Mr. Reeves' experiments on Little Leaf," he writes June 3, "they seem to indicate at the present time that treatments with zinc sulphate have been rather disappointing. Trees treated either by injection into the tree or by applications to the soil have not shown any significant change for the better. Last fall after treating several trees it appeared that some of them might have been benefitted by zinc sulphate treatments. However, this spring they are as badly affected as ever. Treatments this spring with copper sulphate have shown no effects at the present time. At the Shannon Ranch, a number of trees were treated by the injection method, with both copper sulphate and zinc, applied April 20th. In a few days those treated with zinc sulphate showed several leaf burning and many of the unaffected leaves were dropped while the rosetted leaves remained. The treatments consisted of eight holes bored into the base of the tree, each containing two grams of zinc sulphate. Copper sulphate treatments at the same rate and method showed no deleterious effects. In view of the very encouraging results obtained with certain trees in California and Arizona with zinc compounds, we are at a loss to account for our failure to get response. Little Leaf seems to be on the increase in the Wenatchee district and in some cases constitutes a very serious problem. Mr. Reeves will continue to experiment with different methods of application of zinc compounds as well as other materials.

"Owing possibly to climatic conditions during full bloom, many varieties of apples have set a rather light crop. Winesaps in particular are light in most sections. An interesting feature of the fruit setting throughout the district is the large number of lateral blossoms which have set fruit on last year's terminal growth. The bloom was considerably later than normal spor bloom but a high percentage have set fruit and it appears at this date that a rather good percentage will stick. I had

FRUIT AND NUT PRODUCTION

C. P. Harley (continued)

noticed this condition on Winesaps and Jonathans particularly. In the case of Winesaps, it may prove beneficial but in the case of Jonathans which, in general, have already set a rather large crop, this late bloom and set may just mean added expense in thinning. On the basis of leaf area, this laterial blossoming and fruit setting is rather hard to explain, since in many cases it occurs on trees which bore an extremely heavy crop last year. We have lined up an orchard of biennial bearing Newtown trees for this year's thinning experiments. We were fortunate in locating an orchard of this type close to town and this will save us considerable time in going to and from our experimental plots."

On May 24th he wrote: "This week just about completes our thinning records on biennial bearing Yellow Newtown trees and also the blossom records from our periodic ringing experiments on Winesaps and Jonathans. Although our records are not at the present time tabulated, we feel that they will show some very interesting results. Our early thinning with 70 leaves per apple has resulted in the production of quite a number of blossom buds for this year. As an estimation, I would say that probably 35 percent of the spurs whichwere thinned have formed blossoms this spring. Fruit thinned to 50 leaves per apple at the same time, June 9th, had a very low percentage of blossom buds formed, possibly less than 5 percent. Our late thinning with both 70 and 50 leaves per apple in the early part of July apparently had no effect on increasing blossom bud formation."

B. G. Sitton and J. L. Pelham, Shreveport, La.

"Thursday a trip was made to Toledo to make observation on irrigated plots there and to set up the pumping plant so as to have it in readiness for irrigation when necessary," says the June 3 report. "However, the river was so high that it was impossible to set the pump at a point low enough to provide proper suction for the low stages which will occur during the summer...Observations without definite count indicate that the set of crop is considerably better on the plots which were irrigated last year than on the dry plots. However, there is considerable drop, due in part to the case bearer, but the majority is due probably to some physiological cause, possibly failure in pollination."

"Friday a trip was made to Winona, Tex. to make records of rosette conditiins on treated trees and to check up on the set of nuts in various plots," comments the report for the week ending May 27. "As a whole there is a fairly good set of nuts in this orchard, altho the Delmas which had a big crop of nuts last year failed to set this year. The Stuarts have a pretty fair crop, the Schley a partial crop, and other scattered varieties a good crop."

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

Wm. R. Barger, Indio, Calif.

"The weather is starting to warm up," he writes, meaning that at Indio it starts at around 100 in the shade early each morning and then works up to 150 or so. And he adds: "The cool wind at night is thankfully accepted in spite of the sand and dust it brings with it. Our late spring has cut off a month of hot weather at this end of the summer, the maximums so far of around 100 have been only for a couple of hours each time. However, we have oiled up all our fans and shorts and sweets will probably be the official uniform soon enough.

"I used to thrill at the unfolding of Spring when traveling from Washington to Florida in March or April, but California in her big way has spring tumble right thru Summer at this time in the fifty miles from Banning with an elevation of 2,400 feet to Indio. Banning, with lilacs, spiraea, cherry blossoms and smoking chimneys--while here at Indio there are a few last roses of summer, hollyhocks, marigolds, and roasting ears. That is, the corn is nearly on the hoof or in the bread basket.

"Local tomatoes and dry onions are moving out of the valley for most any offer, but when the 'green grocer' was asked the other day why tomatoes were so high in Indio, he said that they all came from the Imperial Valley where the season has been a little late, and that he could not get 'locals' because they were all being shipped to San Francisco."

Incidentally, this man Barger is doing his best to make it impossible for people to keep dates--at least he is showing fruit handlers how to get their dates into the hands of the consumer in such attractive condition that they will soon be disposed of. The Technical Bulletin No. 193, by Sievers and Barger, on the processing and storing of Deglet Noor dates in California continues to be one of our best sellers.

Lately the Hon. Editor had a chance to sample some fruits which Wm. R. had stored in a commercial frozen meat room from December, 1931 to January 1933, and then held for four and a half months in an ordinary refrigerated ice-cream dispensing cabinet of the type commonly used in retail stores. If any fruit coming from a region running temperatures of 100 to 150°F. may be called heavenly, these dates merit the title. This work certainly appears to show that proper conditions for preserving dates of the semi-cured type are easily available to the wholesale and retail dealer and not expensive, considering the high class of the fruit. Almost any sort of marketing system should be able to dispose of fruit within a year and a half!

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

Edwin Smith, Wenatchee, Wash.

"The week of May 19th was occupied with completion of Delicious inspections," he writes on June 5. "The late inspection of Delicious gave no significant information save that the very immature fruit was slightly less objectionable to the taste, though far removed from being desirable. Future work on the quality of Delicious strains may have to eliminate all lots having a pressure test above 15 pounds. The market quality of Delicious is being done a grave injustice through picking either Starking, Richard or Delicious less mature than this regardless of color.

"The CO_2 treated Delicious maintained their satisfactory condition right through to the end, one lot equalling the precooled lot, the second lot having superior keeping qualities.

"The week of May 29th was occupied with the spray residue meeting under the auspices of the Regional Agricultural Credit Association in Spokane on May 31st and the inspection of fruit from paper board cartons and with various protective liners, which work will be completed this week.

"Mr. Ezell made the last pear respirations and is starting the last alcohol and aldehyde determinations.

"Reports continue to indicate a light Delicious crop but a fairly good Winesap crop. The weather continued cool and cloudy until after Memorial Day, it being so unpleasant that several of the Department staff spent the day in the laboratory. Since then the weather has been normal, causing the first roses to open about June 2d. A visit in Pateros Sunday indicated that their season has been more normal so that roses and other flowers in the lower Methow are as advanced as in the city of Wenatchee."

On May 29th he reported the completion of the Washing experiments for the most part but adds "We were able to hold down excessive foaming of Vatsol and hydrochloric acid with Turkey Red oil, but when sawdust was added to sodium silicate, we had no means of controlling foam. We are inclined to believe that if sawdust is a requisite to a flood type machine the latter will have to be modified to keep the foam in.

"The chemists are doing fine work and bettering their schedule of 24 analyses per week--however beginning this week we have 94 samples ahead of them, equivalent to 188 analyses or seven or eight weeks' work, not to mention the sodium carbonate - sodium acetate series yet to be run, nor additional machine tests suggested by the dipping experiments." He wrote that codling moth emergence was slow and that the set of applies although reported spotted promises a good crop. The bad weather during the blossoking period seems merely to have reduced thinning expenses.

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

James S. Wiant, New York Pathology Notes.

Writing from New York City under date of May 22, Doctor Wiant gives us some very interesting comment on transportation tests. He writes: "A large number of special transportation tests have terminated in New York City during the past few weeks and have therefore required considerable attention on our part. The most extensive test was that on asparagus, from Mr. Pentzer. Nine cars in all were received. Methods of precooling, loading and re-icing were, among other things, represented in the tests. Four cars of tomatoes are due today from the Rio Grande Valley. They are being accompanied by Mr. Hukill. These cars comprise a comparison of crosswise loading with lengthwise loading. Observations have also been made recently on dipped and undipped oranges sent up by Mr. Winston and on strawberries that have been covered with cellophane and sent to the market by Mr. Dearing of the Coastal Plain Station. Examinations have also been made of oranges in ship cargoes from California; and Oregon pears packed in cardboard cartons and wooden boxes for a comparison of bruising.

"The final cargo of Chilian honey dew melons of the season arrived a week ago. Although prices were unusually low during most of the season arrivals were high throughout, approximating fifteen thousand boxes every two weeks. The percentage of decay was high but the extreme losses of last year were not duplicated. Several small shipments of honey dews from Argentina represented the first melons from this country since 1930. The Mexican arrivals of honey dews overlapped those from South America for several weeks. These were much smaller melons but arrived in good condition and were of excellent eating quality. In connection with the melon season, it is of interest to note that the first car of California cantaloupes arrived May 10. Several dozen cars have arrived since then.... California cherries have been on the market here for two weeks, having reached carload lots a week ago with around fifteen cars total for the past week. The condition has been good....We have not had occasion to follow the strawberry season as closely as in former years, but understand that the southern berries have arrived in somewhat better than average condition.

"California asparagus arrived in excellent condition in the season which closed a few days ago. The conditiin was by far the best that has been noted for several years... Early season potatoes from Florida showed heavy losses from late blight about five weeks ago. During the past week losses from scald followed by bacterial soft rots were exceptionally heavy. An unusually large amount of Florida citrus fruit and potatoes is being shipped here by boat. Most of this arrives on the Clyde line. It is reported that similar increased water arrivals on the Merchants and Miners line have occurred at Philadelphia."

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

H. C. Diehl, Seattle, Wash.

"Under the influence of a pronounced summer type high pressure area, the weather in the Puget Sound district finally took on a warm summery aspect for the last half of the week," he writes June 5. "The maximum was 73°F. while the minimum was 46 F. Earlier in the week frost destructive to garden vegetation was reported from the islands in the Sound, notably Bainbridge and Orcas.

"The activities of the week had the flavor of variety and ranged from the problems of equipment construction and installation to a thorough microscopical examination and organoleptic examination of peas frozen at temperatures in the range -90 to -20° F. The jobs will probably be finished during the coming week, giving us an excellent food preparation, scalding and heat processing setup, in addition to our present sealing equipment and freezing chamber. Prices on frozen pack strawberry futures have not been attractive so far, because of concern about the size of the Eastern frozen pack which rumors have it will be large due to the abundance and cheapness of fruit in Eastern producing centers. The total crop in the Northwest will be, no doubt, radically reduced in size due to the ravages of the winter temperatures, but the volume of fruit frozen packed may still be a very sizeable tonnage because last year (1932) with all the wastage the total pack was still about the same as in the 1931 season."

On May 31 he wrote: "The growing season remains abnormally late, strawberries being now in full bloom around Seattle. I recall other years in which strawberry picking was in full swing at this date in May. About Chehalis no harvesting is anticipated before June 15....The winter temperatures certainly had their effect on raspberry canes in this section, where only a 50 percent crop of Cuthbert raspberries is anticipated."

POTATO INVESTIGATIONS.

P. M. Lombard, Presque Isle, Me.

"The reduced acreage based on reports is somewhat conflicting," he writes on June 4, "but a conservative estimate would be about 25 percent. The potato market which has held quiet and steady at 40 cents a barrel was a little stronger Saturday, one dealer offering 65 cents for firm, well-graded stocks.

W. C. Edmindson, Greeley, Colo.

Report of May 31: "Last Monday we had a very severe wind storm. Some trees were uprooted, others broken and some buildings were slightly damaged. About 4,000 acres of sugar beets were destroyed and some other crops damaged. Some growers are reseeding with beets, but others are replanting with other crops."

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

W. T. Pentzer, Fresno, Calif.

"Since making the last report," he writes on May 22, "we have been engaged in some asparagus shipping tests with the University of California, in addition to the regular seasonal work.

"The weather continued abnormally cool throughout the shipping season, and conditions causing trouble in transit were not encountered in the tests. A method of cooling the asparagus bunches by standing about 12 minutes in ice water showed some promise. The temperature of the pulp was lowered from about 63 degrees to 40 in this length of time, with water temperatures of about 33 degrees F. The water was recirculated from the standing tank through an insulated ice-melting tank. The cooling obtained by this method was equal to about five or six hours of cooling by portable car precoolers, and the ice meltage was about the same.

"The final inspection of grapes in storage was made the first of May, after about five months" storage. The best looking fruit at this time was that packed in sawdust to which had been added sodium acid sulphite. Three grams of sulphite did not entirely check mold growth for the entire five months at 32 degrees, but six grams of sulphite per sawdust lug did. While nine grams of sulphite retarded mold growth, considerable SO_2 injury was observed in the form of sunken capstems. Most of the fruit after this long storage in sawdust had a sawdust flavor and and lacked much dessert quality.

"We are now running sugar analyses of grape tissue from our Emperor growth and storage studies and hope to finish this part of the laboratory work in a couple of weeks. While there has been some spotted frost damage to grapes, the estimates are for a fairly large crop.

"The recent advances in raisin prices have been encouraging to the grape growers, and strength in the cotton market has also made for more optimism in the San Joaquin Valley. The weather still continues several degrees below normal, and rainfall is about four inches below normal. Fairly good snow packs indicate a fair irrigation water supply; not as good as last year, but better than the year before

"During the past two weeks, Mr. Asbury has taken some leave in celebrating the arrival of a nine-pound-ten-ounce son. I took off a few days to get some first-hand information on snow-pack and fishing conditions in the Sierras. We were successful in finding lots of snow."

FRUIT DISEASES

M. A. Smith, Ozark Fruit Disease Laboratory.

"It is becoming more apparent that many orchards in this section do not have the set of fruit which they would oridnarily have had following the heavy bloom this spring," he writes under date of May 27.

"This seems to be particularly true where there was a delayed bloom, with a possible lack of pollination. In other instances where pollination was apparently satisfactory, there seems to be a heavy dropping of the apples. One grower near Marionville has lost almost his entire crop during the past two weeks, due to dropping.

"We observed several instances of fruit dropping due to infection of fruit pedicels by scab. When these conditions occurred, we found that the grower had applied the calyx and cluster bud sprays too late to check scab infection."

Howard E. Parson, Spring Hill, Ala.

"At Spring Hill, Alabama scab infection was found on young Schley nuts May 22," he reports for the week ending May 27, 1933. "This means that the nuts are susceptible to scab from the time of pollination because there have been no infection periods since the pollen was shed.

"The latter part of the week was spent at Biloxi, Mississippi, getting a water supply to the experimental plot for spraying.

"Local showers began Friday, breaking a dry spell in some localities lasting since the first of May."

John C. Dunegan, Fayetteville, Ark.

Doctor F. P. Cullinan, fully recovered from a certain Atlantic City trip, has been spending some time in the vicinity of Fayetteville we learn from Mr. Dunegan's report. Doctor Cullinan visited the Crowley's Ridge section about Wynne, as well as the estensive peach plantings around Nashville and Hope. The county agents met him at these points, in accordance with arrangements made by Mr. Dunegan, so that he had a chance to get a fairly representative idea of the Arkansas peach sections with a minimum expenditure of time. In fact, so efficiently did Mr. Dunegan manage the thing, that we are expecting Doctor Cullinan to recommend him warmly to Doctor Auchter in connection with the handling of future trips to scientific meetings, etc. by groups of our staff workers.

Mr. Dunegan writes that Doctor Cullinan brought peach leaves from Nashville showing very numerous Bact.pruni infections. "If these specimens are representative," he says, "the disease is present in a aggravated form in some of the orchards."

FRUIT DISEASES

Leslie Pierce, Vincennes, Ind.

"Several orchards in the Henderson, Ky. section were examined May 16," he reports May 20. "In one orchard of 18 acres of trees twenty-five years old, the crop had been completely destroyed by scab with the exception of that on a few trees of a variety called Polly Eades, which apparently is immune to scab. The orchard had been sprayed twice, cluster-bud and calyx applications. In two large orchards which had received three pre-blossom, calyx and ten days after calyx applications, the set of fruit was fairly good. Scab had been moderately well controlled where the five applications had been made."

On May 13th he reported that the rainfall for the period from May 1 to 13 measured 6.41 inches. "Rainfall is recorded for eleven of the thirteen twenty-four hour period," he adds.

"Reports of a poor set of apples on most common commercial varieties are beginning to come in to this laboratory. It seems apparent that scab is responsible for the failure to set in the case of most varieties. Where only one pre-blossom application to control scab was made on Grimes, the crop has been destroyed by the disease. In the case of scab-susceptible varieties the application of two, three and as many as five pre-blossom sprays failed to prevent severe infection on the stems of the blossoms."

TRUCK CROP DISEASES

Dr. J. C. Walker contributes to the Journal of Agricultural Research for April 1, 1933, a study of yellows-resistant lines of Jersey Wakefield cabbage.

The cooperative investigations between the Division of Horticultural Crops and Diseases and the Department of Plant Pathology of the University of Wisconsin, confirm, according to Doctor Walker's report, the results stated earlier, from which it was concluded that a single-factor difference exists between plants highly resistant or highly susceptible to the yellows organism.

"It is further demonstrated," says the paper, "that from resistant survivers occurring when the Jersey Wakefield cabbage is planted on infested soil, homozygous resistant pure lines can be secured which continue to be completely resistant in succeeding generations."

In the course of the investigations discussed, it was found that by rigid selection for type and uniformity of maturity it is possible to combine the desirable characters of this variety with resistance.

BULB INVESTIGATIONS

Bulb Investigations experiences annually a season of enjoyment, so to speak, and one of hard labor. The latter, both the most important and the most laborious, is already under way.

Late in May--or, rather, on May 22--digging began on James Island, and a few days later at Willard. These two jobs are finished, and the bulbs are on the shelves. On the last days of May, digging began at Arlington Farm. Hyacinths were the first to mature here, and are in very fine condition.

A propagation of three varieties of hyacinths was made in 1931. Ten percent of the bulbs are now large enough to be marketed as miniatures. With another year's growth, 75 percent of the progeny can be turned off as bedding or forcing miniatures and the remainder the following year. This means that scored bulbs have been grown to merchantable size again in one and two years beyond the matrix stage.

Digging will begin next week on the early, small miscellaneous bulbs at the Bellingham station, but digging in earnest will be delayed until about the 20th of June. It will be finished probably a little before the middle of July.

After digging a period is devoted at Bellingham to the cleaning and working over of the stocks, and then planting begins as soon as this task is finished.

It is interesting and inexplicable to most people why planting takes place in reverse order to the digging. In reality we begin planting as soon as the stocks can be gotten ready after digging and cleaning of the stocks has taken place. At times tulips and less frequently daffodils are replanted by the end of July. They are always, in recent years, reset by the end of August. Doctor Griffiths does not believe there is anything gained in planting before the last days of August, except the strategic one of getting the work pushed ahead as much as possible in this rush season.

Why we dig last and plant first at Bellingham and then work southward in reverse order to the digging, is a longer story and requires much explanation, but Doctor Griffiths has promised to "tell all" as soon as he gets another bottle of ink--or a new lead pencil.

Yes, indeed, the hard work in this bulb business is, as the boys say, all a lot of hoe-y; the season of enjoyment comes when we can feast our eyes on the results of the work--especially when we have done none of the work!

ADMINISTRATIVE NOTES

Speed up Vouchers! In view of the fact that it is important that the Business Office close its books for the Fiscal Year 1933 at the earliest possible time, it will assist greatly in accomplishing this if you will give special attention to securing and forwarding promptly for payment vouchers covering all expenses incurred up to June 30, 1933. Wherever possible, these should reach the Business Office not later than July 15, 1933. Your final voucher for the Fiscal Year should be accompanied by a note indicating this fact, so that authorizations may be closed out and balances released.

Automobile Mileage. Figure automobile mileage from and to city limits. The General Accounting Office has made a number of suspensions from reimbursement accounts recently owing to the fact that claim for use of personally-owned automobile on a mileage basis did not indicate that the mileage charged for was from and to the city limits of the employee's station. Since the law authorizing payment of mileage for use of personally-owned cars limits mileage allowance to travel to and from the corporate limits of field stations, care should be taken to state charges accordingly on the automobile travel report by using the words "From corporate limits of _____ (your field station) to _____" or "From _____ to corporate limits of _____ (field station)."

Increasing Salaries. The Comptroller has ruled that an increase in payment of salary to any temporary employee constitutes a promotion and so is prohibited by law just now. This means that no worker may be employed at a higher rate than previously paid him for the same kind of work. In case he is assigned to different and more difficult duties and is consequently paid a higher salary, it will be necessary to submit with the pay voucher a statement showing nature of duties previously performed and rate of pay, and those which are being performed at the higher rate. The statement must be submitted separately from the voucher and signed in duplicate.

Reduced Fares. The Washington Post tells of an employee who rather went to extremes in obeying the injunction to make use of excursion and other special rates. He was coming to Washington from his Middle West station and on inquiring for cheap rates was told that the lowest fare offered was in connection with the Baptist Convention and he would have to get a certificate from a minister of that denomination to secure the special ticket. He visited a minister and was told that only members of the Baptist church were allowed certificates. So he joined the church, was baptized, and secured the special excursion rate for his roundtrip ticket to Washington, D. C.

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The OFFICE OF
HORTICULTURAL CROPS AND DISEASES
SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

Effective July 1, 1933,
the name of the Division
was changed to

FRUIT AND VEGETABLE CROPS AND DISEASES

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I -- M O N T H L Y N E W S L E T T E R.

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.

John A. Ferrall, Editor

This NEWS LETTER is for distribution only to employees of the Division, and the material contained in it is of an informal and confidential nature and is not to be published without securing the approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers, of course, represent their personal opinions, and are not necessarily the official and final word on the subjects which are discussed.

Vol. V Washington, D. C., July 1, 1933 No. 13

Diseases of Ornamentals. Dr. F. P. McWhorter has given the NEWS LETTER some very interesting notes on the recent developments in investigations of mosaic diseases of ornamental bulbs, etc. "In 1930," he writes, "we made permanent plantings of three narcissus varieties to determine the natural spread, if any, in rows where the plants were left undisturbed. In this setup we attempted to evaluate three factors: (1) the effect of distance on mosaic spread; (2) the effect of percentage of mosaic within a group on spread; (3) whether natural spread takes place through underground or aerial parts of the plant.

"In the section of our plot where we compared the effect of slightly varying planting conditions, we now record a significant mosaic increase, but the increase is not proportionate to the distance apart the bulbs are planted. In this experiment we used planting distances of two to the foot and three to the foot. In the case of Talma, an initial planting of 66 bulbs containing 27.2 percent mosaic, planted in 1930 at a distance of two to the foot, now records in 1933 a mosaic content of 62.1 percent, being an increase of 34.9 percent mosaic.

"A comparable test, but planted three to the foot, containing initially 29.4 percent mosaic, records now 60 percent mosaic, an increase of 30.6 percent. Sir Watkin, planted two to the foot, containing initially 27.2 percent mosaic, now records 59.3 percent, and increase of 32.1 percent. Planted three to the foot, Sir Watkin shows 38.8 percent mosaic increase. The differences as affected by the closeness of initial plantings are entirely insignificant, but on the other hand, the location of the new 1933 infections indicates very clearly what is

taking place. For example, in one of the bulb lots, 19 out of 23 of the infections are immediately adjacent to previously diseased plants.. On this basis the other lots record 22 out of 26, 16 out of 20, and 30 out of 33.

"In another set of plots, one was originally entirely free from mosaic; and was planted four feet from the nearest mosaic plants. In other plots the initial percentages include 7.6 percent initial mosaic, 35.1 percent, 38 percent, 48 percent, and 76.1 percent. The checks with a 4-foot area of isolation have remained entirely free from mosaic during the three-year period. At present, the 7.6 percent mosaic lot (ratio nine healthy bulbs to one mosaic) now records 12.8 percent mosaic, the increase being 5.2 percent; the 35.1 percent lot (one mosaic plant to two healthy) now records 48.6 percent, an increase of 13.5. The 48 percent mosaic (two mosaic plants to two healthy) now records 65.3 percent, an increase of 17.3. The 76.1 percent mosaic (one healthy to four mosaic plants) now records 95.2 percent, an increase of 19.1.

"The majority of the new 1933 infections are adjacent to previously diseased plants. Results with Minister Talma are even more striking. Here again the checks have remained entirely free from modaic during the three year period, and they are planted only four feet from the nearest mosaic-infected stocks. In the mosaic diseased lot, the percentages of increase are far higher than in the case of Sir Watkin. For example, the 7.6 percent lot now records 17.6 percent, an increase of 10 percent. The 35.1 percent lot now records 75.6 percent, an increase of 43.2 percent. The 48 percent mosaic diseased lot now records 78 percent, an increase of 30 percent. The 76.1 mosaic diseased lot now records a content of 100 percent, increase being 23.9 percent. Summarizing the factors for Talma, we find 40 new infections recorded for 1933. Of these 37 are in plants adjacent to previously diseased plants.

"When we remember that the checks in this row, isolated by a natural soil barrier of only four feet from the lot containing mosaic-diseased bulbs, have, without exception, remained absolutely healthy for a period of three years while all lots containing mosaic-diseased individuals have increased their mosaic content through natural spread, no roguing or artificial inoculation of any kind having been administered to these lots, we feel that there can be but one conclusion--that the mosaic has spread through the soil."

Commenting on the tulip disease problem, Doctor McWhorter continues:

"There are now several large tulip plantings in the Pacific Northwest, and the growing of this bulb is on the increase. Some of the Dutch firms are going into tulip growing here on a big scale, using mechanical methods of cultivation, digging, etc. They agree that if Botrytis blight can be controlled they can grow tulips. I visited several of these larger tulip

places, including those near Canby and near Eugene, Ore. and near Sumner, Wash. In every instance the Newton Botrytis spray had been used with results which in the opinion of the growers, were truly phenomenal. Notwithstanding the fact that we have had one of the wettest and also one of the cloudiest years on record, fire, from an economic view point, has been eliminated from tulip plantings wherever this spray was used. It is true that most of the large growers use no checks, but spray everything on the place, but they remember what they had in previous years, and therefore conclude that the spray accounts for the remarkable health of their tulips this year. There is another important consideration in the efficiency of this spray--when applied to foliage where tulip aphids are present, it seems to have a direct killing action on aphids.

"The lily growers, however, are having great difficulty with the Botrytis disease of this crop; in fact, more difficulty than we have ever before seen in Oregon. One of the best growers had so many Regal lilies injured that he is throwing away thousands of bulbs because the plants were completely defoliated during May. This grower tried to hold the disease in check with bordeaux, not having heard of the Newton spray, and claimed that brodeaux had no effect whatever.

"The climatic conditions which increase the Botrytis disease of lilies so alarmingly have brought about a very peculiar situation in narcissus. Our explanation is that the continued cold wet weather has permitted extraordinary growth of Botrytis and this organism has attacked the basal portion of what should be dark green leaves. In some places, especially in Washington, large plantings, or rather variety blocks, of narcissus matured by the 20th of May, notwithstanding the fact that there was no sun or drying out effect whatever. It is entirely a disease situation.

"This year our tulip mosaic studies have given fruit in that we have proven conclusively the theory that the breaking of tulips results from two viruses, not one. In 1932, we had shown the action of the purified viruses, but we had not synthesized a normal broken tulip. Now we can report complete success in our attempts to mix these viruses in varying proportions and produce therefrom the spectacular flame or flag type of break which we normally accept as a broken tulip. We have shown, as indicated by our results this year, that when the color-adding virus is present in a concentration not less than 100 times that of the color-removing, and both in turn are present only in great dilutions in the inoculum; for example, at 1 to 100, that the resulting effect on a once healthy plant is the spectacular white and red breaks that characterize the normal broken tulip.

"Another important observation made this year may be summarized in the statement that pollen from a mosaic-infected or broken tulip carries the virus, and that when this pollen is used as an inoculum and put into a healthy tulip, a very high percentage of broken plants results in the ensuing year.

"Our most important contribution this year will be the announcement that the tulip is itself a remarkably adapted plant to analyze the various viruses present in mosaic diseased lilies. It has been assmed and in fact stated in previous publications, that lily mosaic results from one virus, and that the virus diseases of lily are only two in number -- mosaic and yellow flat.

"In our lily-mosaic collection we now have a comprehensive collection of mosaic types, but we do not have any yellow flat. During 1931-1932 we showed that the average mottled condition of Speciosium lilies carried a virus which in effect on tulips was indistinguishable from the color-removing virus of tulip. This year we have confirmed this and by using selected lily material find that the lily mosaic situation is not simple. The mottle types produce color-removing effects in tulip, but those where curling is present produce an entirely different effect. The tulips paint a picture that is tremendously different according to the lily mosaic type used."

DISEASES OF TRUCK CROPS

Our Press Service has given out an excellent note concerning the work of H. L. Blood of this Division in connection with bacterial canker disease of tomatoes --reported on by him at a meeting of the Utah Academy of Science, Salt Lake City, Utah, on June 12.

"Bacterial canker is a serious disease affecting tomatoes which has been much more common and destructive since 1927 than it had been before," says the review of this work. "As a result, scientists of the U. S. Department of Agriculture and at several State experiment stations have been seeking methods of control. They learned that the seeds carried the disease and were experimenting with various chemicals as disinfectants. In recent years canneries and seedsmen have been using high speed power machinery for extracting tomato seed from the ripe tomatoes. In general, the older and slower method of placing tomatoes in vats to ferment until the seeds loosened from the pulp has been discarded. But Mr. Blood had a lot of tomatoes which he knew were infected with the canker disease. He wanted this infected seed for tests of disinfectants. He did not have a power extractor, so he went about it in the discarded way, by fermenting the fruit pulp. From this lot he planted untreated seed, and seed treated with various disinfectants, and to his surprise he found that the untreated seed which came from severely infected fruit was practically free from the disease--as good or better than disinfected seed from the same lot. He repeated the experiment in Utah, where the disease has been destructive. Again the fermented seed from infected fruit proved free from the disease, and for this reason superior to mechanically extracted seed. The experiments are being continued to determine how long and at what temperature the seed tomato pulp should be fermented to get the most desirable control of the disease."

FRUIT DISEASES

Lee M. Hutchins, Fort Valley, Ga.

Writing from Fort Valley on June 12, he says: "The movement of the Georgia peach crop is now under way. Mr. John H. Baird, President of the Hale Georgia Farms Company, who has managed the Hale orchard for the past 35 years, tells me that for the free stone varieties a crop of outstanding quality is in prospect. We had a very dry May and early June, which according to Mr. Baird is requisite for exceptional carrying qualities.

"Prolonged dormancy was evident again this year in the Fort Valley district but was mild compared to last year's record. This caused an almost total loss of Redbird and Mayflower varieties from Fort Valley southward, although north of Fort Valley these varieties were more successful. At Thomaston and northward, Uneeda and Early Rose are now being picked and are slightly ahead of the Fort Valley district; these northern districts were less affected by prolonged dormancy. Movement of Uneeda and Early Rose is just beginning at Fort Valley. It is estimated that Hiley will begin to move here on about June 25th and that Elberta will begin to move July 5th....Estimates on the crop movement from Georgia this year vary between 6,000 and 8,000 cars.

"Early in the season an exceptionally severe attack of peach leaf curl was evident at Cornelia and other points in north Georgia in orchards where winter spraying had been neglected. Hail injury has been more prevalent than usual all over Georgia this year. In restricted sections, particularly near Griffin, practically a total crop loss occurred in certain orchards."

He adds in a postscript: "The Hiley crop will be heavy in the Fort Valley territory, but light in north central and north Georgia on account of damage to buds from the freeze of February 9 and 10. Elberta will be heavy here and at Thomaston; lighter than usual in the northern part of the State. Prolonged dormancy held the buds back at Fort Valley. They were farther along at Thomaston and in north Georgia, which resulted in heavier killing by the February freezes.

A. J. Riker, Madison, Wis.

"Since the crown-gall bacterial produce the disease below 30 degrees but not above it, we have been extending our physiological studies to the activity of this and related organisms above and below 30 degrees Centigrade," he writes on June 10.

DISEASES OF TRUCK CROPS

W. J. Zaumeyer.

Doctor Zaumeyer writes from Greeley, Colo. early in June that he and Doctor Wade have completed their two-acre bean plot and that if the warm weather continues the crop should be up in about ten days. (Well, if the Greeley weather has at all matched that of Washington, D.C. for June, the crop is up---and has been up for two weeks or more!)

"Half of the plot contains hybrid material which is being developed for disease resistance, especially to rust and mosaic," he says, "while the other acre contains increase lots of garden and lima beans, some of which we plan to run in a canning test later in the season. Others will possibly be tested next year on a larger scale.

"The bean acreage in this section of Colorado is somewhat increased this year over last, principally because of the high price of Pinto beans which is one of the most popular field beans in this territory. The acreage of seed beans is also larger than last year. The pea acreage for the State, both for market and canning, is reduced from last year, with about 9,000 acres being planted. In a preliminary survey made a few days ago in one of the canning sections of this vicinity, bacterial blight was observed following a hail storm which occurred about three weeks ago. It is possible with the high temperatures and the low humidities which are prevailing at the present time, that the infection will not spread."

Wm. D. Moore, Charleston, S.C.

"We received a total of one inch of rain during the week ending June 17," he reports, "which relieved the serious drought conditions at least temporarily. Temperatures have also dropped to slightly below normal, due to the general lack of moisture in the soil previous to this rain, all crops are still in need of more water. The tomato and pepper fields have been benefitted to a marked degree so far, but will not produce a normal crop regardless of further rains. Lima beans are setting barely half a crop and it is not certain that this fruit will mature. General crops, such as corn and other feed plantings, are in fairly good condition at this time.

"I have one report this week from the lima bean section north of Kingstree stating that heavy losses are being experienced at this time from bacterial blight. Specimens received verify this report. I am planning to visit this area next week in order to learn more about the seed sources of this planting and to inspect fields for other diseases that may be present."

FRUIT AND NUT PRODUCTION

C. F. Kinman, Sacramento, Calif.

"In the cherry growing regions in Sutter County there has been considerable complaint about failure of fruit of some varieites, especially Bing, to come to full size," he writes on June 15. "In many orchards the Bings have been small. Shallow soil in some of these orchards may be responsible for the trouble, although in former years the fruit has been normal....The set of fruit appeared to me to be very sparse in some of the avocado orchards I visited in southern California last week. Some varieties have been blooming for a considerable time but the blossoms have set very poorly so far. One of the avocado varieties that the Government introduced a few years ago has been considered very promising but at present the tree is not showing sufficient thrift to warrant much optimism. This variety is the Mayapan. Some of the shippers are very partial to this variety as they say that it carries well and it has, of course, an excellent flavor and texture."

J. R. Furr, Pomona, Calif.

"The spring set will be very light on the plots at the Warren ranch," says the report of June 16. "These trees were badly defoliated. Over half of the leaves were lost as the result of three severe wind storms during the fall and winter. These are now pushing numerous leafy shoots, but are setting practically nothing from the heavy spring bloom.

"Early this week Mr. Taylor and Mr. Nichol (of the Bureau of Agricultural Engineering) and I visited eight citrus groves in the Corona district to observe work being carried on by the Citrus Experiment Station and the Corona Water Company. Trenches four feet deep, extending across three rows were dug so that root distribution and character of the soil might be observed....One trench was located in a very vigorous, highly productive lemon grove of the Corona Foothill Lemon Company. This soil is a loam containing much gravel and large pieces of angular rock, is unusually permeable to water, and the texture indicates that it is well aereated. The roots were distributed with remarkable uniformity from one foot below the surface to the bottom of the four foot trench. We were told that this block of trees will remove the available moisture from the root zone and wilt in 30 days from the time the soil was at field capacity. They find it desirable to irrigate in alternate furrows at 10-day intervals, or to apply water in all furrows every 20 days....

"The vigorous lemon planting referred to above was on grapefruit root stock. The trees on sour orange in this planting are very much inferior and are being pulled out and replanted with trees on grapefruit....Some of the trenches showed very sparse and non-uniform distribution of roots, especially in an old lemon planting very likely on sour orange roots.....It is quite likely that sour orange stock is a contributing factor in much of the trouble from declining trees in the San Dimas area. I believe that most of the lemons here are on sour orange roots."

FRUIT AND NUT PRODUCTION

W. W. Aldrich, Medford, Ore.

"Last week the first large flights of the first brood of codling moth commenced," reads the report of June 5. "Immediately the whole 'Valley' started applying the first cover spray. Recently large infestations of red spider (Two-spotted mite) have appeared in many orchards. This appearance is fully six weeks earlier than in 1932. In all probability this red spider infestation will result in a second cover spray within ten days, using combined lead and oil.

"Thus far, juding by the Anjou trees at the Medford Experiment Station, trees without any irrigation this season are not showing any signs of moisture shortage, even when a rye-vetch cover crop was not turned under until last week. This lack of suffering from low moisture in heavy soil is probably because the weather has continued cool. If the weather becomes hot, and the pear growers delay irrigation until after the second cover spray, it seems quite possible that many of the orchards will suffer for lack of irrigation during June.

"This spring practically all varieties of pear blossomed heavily and in spite of the short (seven day) period for pollination, there was a heavy set of blossoms. During the past week when the first drop of young fruits began, the drop in many orchards was very heavy. Professor Reimer told me of orchards where the drop was as high as 80 to 90 percent. With Bartlett and Bosc, there will still be a large commercial crop left, but in many Anjou blocks this heavy drop will mean a light crop. It is not unlikely that in many cases the heavy fruit drop this year resulted from a devitalization of trees last year by insufficient leaves per fruit.

George F. Waldo, Corvallis, Ore.

"The weather during the past week has been rather cool and cloudy, with rain on Thursday and Friday," he writes June 10. "Because of cool weather, strawberries have not been ripening very fast, and so far very little has been done in the way of making selections. The Narcissa variety is among the earliest to ripen and is the best in quality.

"A trip was made to Grants Pass and Roseburg, Ore. over Thursday and Friday, June 1 and 2. In the Grants Pass section the Narcissa was found to be meeting with considerable favor among the growers. The berries are fine flavored, medium size, regular, and are yielding much better than the Marshall. Growers think also that this variety is more resistant to Rhyzoctonia than is the Marshall. ....Very fine Blakemore strawberries were found in the Roseburg section near Myrtle Creek. A variety known as Pride of Gold Hill was seen growing along the lower Umpqua. It apparently is very similar to the Marshall, but probably yields more, according to those who are growing it...."

FRUIT AND NUT PRODUCTION

C. P. Harley, Wenatchee, Wash.

"Our biennial bearing Yellow Newtown thinning program for this year was completed June 7. As stated in a previous report, we were fortunate in locating an orchard admirably adapted to this work, better perhaps than the Holmberg Ranch at Malaga, where we worked last year . The trees this year are possibly more truly biennial bearing trees than any I have seen. The on-year trees are producing fruits on every spur, and the off-year trees and branches are 100 percent off.

"Our program of thinning follows closely that of last year, which was thinning to 50 and 70 leaves per apple June 5, 6 and 7, leaving others unthinned, of course, as check. We will again make a thinning of 50 to 70 leaves per apple the first of July, selecting at the same time for record trees thinned commercially. To date, the grower has not thinned his Newtowns. We have also reduced the leaf area on certain branches from trees in the off-year to determine what type of branch will be influenced by the remaining tree in blossom bud formation.

"We have located our plots for soil moisture and nitrogen studies which consist of 20 17-year-old Jonathan trees. These are very uniform in growth and crop and type of growth made is suitable for our work this year, I think. The 20 trees are divided into wet and dry plots, of 10 trees each. Five of the trees in each plot were treated with nine pounds of nitrate of soda, applied on June 5, and watered in on June 13. On June 13, we selected certain main branches from each tree in each plot and thinned them to a ratio of 30 leaves per apple, as carefully as we could. Next week we plan to measure and tag fruits for measurements and also start taking soil samples.

"The prospects are good for a fine cherry crop. We had three very warm days this week, which brought them along very rapidly. Barring a rain, they should be of fine quality.

C. E. Schuster, Corvallis, Ore.

"A visit was made to a chestnut planting in this State of about two acres , where probably 75 percent of the trees have succumbed over winter," says the report of June 10. "This was a planting well up in the hills and in which there had been serious trouble previously from lack of union between the root and scion. Many of the trees now are dying that show no evidence of this trouble at all. It may be winter injury. At least 75 percent of the trees are almost dead, and more will undoubtedly go before long. This planting is next to the largest planting in the State, and with the trouble that is showing up in the other plantings, it makes the attempt to grow chestnuts very doubtful."

FRUIT AND NUT PRODUCTION

H. L. Crane, Albany, Ga.

"The Georgia-Florida Pecan Growers' Association held their annual meeting in Albany, Wednesday and Thursday," he writes on May 27. "This meeting was fairly well attended. The staff of the laboratory attended all sessions. The meeting was one of the most helpful that has been held in years. The growers are enthusiastic over the work which has been done by the Federal Government in their behalf. A committee was appointed to confer with the Bureau of Agricultural Economics regarding pecan grades and standards, with the idea in view of having the grading terms more clearly defined." (Note.--Doctor Crane was represented on the program of the meeting---presenting a paper on "Results of the Pruning Experiments with Pecans." Ed.)

"Believe it or not--we have a pecan grower who is thinning the crop on his pecan trees J. Slater Wight, Cairo, Ga., has such a heavy crop of nuts set on trees in his Moore and Moneymaker orchards that for the past several days he has had a large crew of men thinning the nut clusters on these trees. Before starting this work he consulted the laboratory regarding the results that might be expected from this practice. The Laboratory is cooperating with him in this experiment and detailed observations are to be made of the results secured.

"Pecan growers attending the meetings reported crop conditions in the various sections of Georgia and Florida. It seems that in Florida the prospects are for a crop about like that of 1931. In Georgia, prospects are for about 30-35 percent of the 1931 crop."

Earlier in May he wrote: "It is indeed interesting to note some of the observations on blossoming this spring. The Moore, Moneymaker, Mobile anf Schley, known as prolific varieties, have generally set fair to good crops of pistillate blossoms. Other varieties such as Delmas, Alley, Frotscher and others have blossomed very irregularly or spotted. The most outstanding variety is the Stuart. In the Albany district only a very, very few Stuart trees have been found which have had any pistillate blossoms on them to speak of. The Stuart is one of the most popular and widely planted varieties, but this year the crop promises to be very light because of little or no bloom. The very light bloom is thought to be due to the effects of the drouth of 1931."

Incidentally, Doctor Crane and Mr. J. B. Demaree came up from Albany and spent a couple of days in Washington the middle of May. Returning to Albany they stopped at Richmond, Va. and secured a 1-1/2-ton truck chassis which they drove to Albany! It is reported that no speed laws were broken and that the approximately 750-mile drive will always remain in their minds as the longest trip ever taken by man.

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

C. O. Bratley, New York Market Pathology Notes.

"In three cars of winesap apples from the Birchmount orchard near Wenatchee arriving on the market about three weeks ago, we found a decay with which we are not familiar," he admits in his report of June 21. "In the three cars, seven, four and sixteen percent of the fruit, respectively were infected. On the surface the decay had the appearance of Bulls Eye Rot, but the decayed tissue resembled that of Blue Mold Rot. Isolations gave consistently a species of Sporotrichum similar, if not identical, to S. malorum. In a car of Winesaps from Orondo, Wash. which arrived today, this organism was found affecting 10 percent of the fruits. The fruit in all four cars was in either the firm-ripe or ripe stage of maturity.

"Lately we have been cast in the role of ornamental pathologist. Many small house ornamental plants are shipped by boat from nurseries in Florida to the New York market. Usually the lower part of the plant is wrapped in sphagnum and oil-paper and packed upright in large cardboard cartons each holding 100 plants. One shipment of Triangularis, Peperomia and Zaylanica totaling 1,600 plants had missed a boat at Jacksonville and were held over for a week on the dock. Upon arrival in New York many of the plants, particularly the Triangularis, showed large bleached areas in the leaves. For two weeks folloiwng arrival these areas became more prominent but following that no spread was noted. Speciments were sent to those familiar with diseases of ornamentals and the trouble was diagnosed as injury from smothering or overheating.

"In a 1,600 plant shipment of Snake Plant which arrived early this week, 30 percent of the plants were decayed starting where the rhizome had been cut from the mother plant. Bacteria and Fusaria were associated with the decay."

H. C. Diehl, Seattle, Wash. Report of June 11-17.

"A week of unusually sunny weather with fairly high temperatures has been present in the Seattle area, and generally in the West of the Cascade region. The low relative humidity and high temperatures did not help the strawberry crop, of which the harvest had just begun. The plants seem to be much weakened in many cases even when fruit is being produced. Ettersburg 121 have not stood the test of a rigorous winter and showed marked reductions in crop, from 75 percent to almost complete destruction. Clark seedling also had a hard winter experience while the old reliable Marshall suffered severely but did get through to some extent....Frozen berry prices in 10 days have jumped from 4-4-1/2 cents per pound to 6-7 cents and may go higher as the local fresh market absorbs its quota of fruit. Some Marshall may be canned, but such action is generally unsatisfactory."

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

W. R. Barger, Indio, Calif.

Writing on June 17th, he reports: "The past few weeks have been spent in detailed inspection and sampling of experimental dates in storage. At temperatures above 15° F. all varieties in ordinary commercial packages commonly in use have either deteriorated or have advanced in life cycle considerably beyond the stage at which storage was started. Deglet Noor dates are still practically the same as when placed in storage in the 15° rooms, but only the fruit in 5° storage of other varieties show texture and appearance practically the same as when placed in storage.

"The importance of storage room humidity (or lack of humidity) has been strikingly shown. Ordinarily, invert sugar varieties absorb enough moisture in 40° rooms to deteriorate in two months and less; in 32° rooms to deteriorate in three to four months; and in 26° rooms to deteriorate in five to six months. Of course, fruit to deteriorate in this time can not be dry and tough when it enters storage but must be of the consistency ordinarily packed for commerce. However, such fruit stored in tin cans at 40° with lids tight enough so that only a small amount of moisture was absorbed during the past nine months are still in perfect condition, while the fruit exposed to the moisture of the average storage room air gained weight rapidly and deteriorated seven months ago.

"The California Date Exchange breathed its first breath of life on June 15, at which time about 91 percent of last year's date tonnage of all varieties of Coachella Valley had signed the agreement to let the Exchange (which is a new clearing house organization and is not to be confused with the existing cooperatives) set the grades of dates and set minimum wholesale prices, and the signers agree to put their fruit through accredited packing houses. Now, if enough sign a second contract, the Exchange can sponser a date marketing and selling organization.

"The 1932-33 crop of all Coachella Valley varieties was placed at 4,500,000 pounds, grown mostly by 150 growers, with an additional 150 people having one acre or less of palms.

"About 125 growers signed to represent the 91 percent tonnage mentioned above. Only two large growers, each having about 100,000 pounds of fruit, refused to join the Exchange.

"Of course, the hard work of organization and operation is ahead, but the starting committee certainly deserves a hand for the work so far."

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

W. T. Pentzer, Fresno, Calif.

"Effective June 1, until May 31, 1934, the Pacific Fruit Express and Santa Fe Refrigeration Dispatch have ordered an emergency reduction of 10 percent in refrigeration charges on deciduous fruits and vegetables," he reports June 7. "On grapes, the standard refrigeration charge to New York will be $94.50 as compared to $105.00 last year. It is estimated that the grape industry will be benefitted to the extent of $500,000.00 by this reduction.

"The season still remains fairly cool, with fruits ripening several weeks behind last year. Early plums have begin to move from the Fresno district.

"A trip was made last week to the west side of the valley in the Mendota asparagus district. Some trouble with some of the late cars shipped was experienced, the tips of the asparagus showing considerable mold on arrival, even though shipped under standard refrigeration and pre-cooled before shipping. The asparagus was of the 'long green'class, the same type of 'grass which was reported to have given trouble last year in the Sacramento Delta district. The 'long green' asparagus consisting as it does of more growing tip than the usual type of stalks showing about one-thid white from the butts up, suggested it might heat more than the 'white butt' 'grass and give more trouble in transit. We have been running respiration rates on the two types of asparagus, and find the 'white butt' type respires about 75 percent as fast as the 'long green'. Incidentally, asparagus gives off CO_2 about as fast as anything we have encountered, with a rate of 505 mg. per milo per hour at 70 degrees several hours after cutting, and even 57 mg. per kilo per hour at 32 degrees in the case of the 'long green' asparagus."

ADMINISTRATIVE SPECIAL

Moving and Christening. On a rather sudden notice, a good part of the Division, including the Business Office, has been assigned quarters on the first floor, Wing 1, in Building C at 7th and B Streets, S.W. Mr. Swartz can be reached by telephones 474 and 475, and his room is No. 1-112.

About the same time, and while the NEWS LETTER was being mimeographed and assembled, we received Bureau of Plant Industry Memorandum No. 717, notifying us that effective July 1, 1933, the name of our Division will be Fruit and Vegetable Crops and Diseases. Please see that this official title is used hereafter in connection with publications and correspondence.

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The OFFICE OF
HORTICULTURAL CROPS AND DISEASES
SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R.

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.

John A. Ferrall, Editor

This NEWS LETTER is for distribution only to employees of the Division, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent their personal opinions, of course, and are not necessarily the official or final word on the subjects.

Vol. V. Washington, D. C., July 15, 1933 No. 14

FRUIT DISEASES

J. B. Demaree, Albany, Ga.

"Zinc sulphate treatments for curing rosette are giving very satisfactory results in some of our experiments," he writes from the U. S. Pecan Field Laboratory on July 1. "This can be said especially for young trees and plots sprayed during April and May with a one-fourth per cent solution of zinc sulphate. One plot sprayed with a mixture of Bordeaux and zinc sulphate is showing less response than where the zinc was used alone. Rosetted trees sprayed in June with a solution of zinc have shown no improvement, due to the complete checking of twig growth by the drouth. The prevalence of rosette in the Albany, Ga. district is much less than last year. The drouth of 1930-31 undountedly was responsible for the great prevalence of rosette in 1932 and the drouth of this year will probably cause the return of considerable rosette next season."

The Georgia-Florida Pecan Growers' Association held its annual sessions at Albany May 24 and 25, the main interest centering on marketing, reducing production costs, and obtaining larger production of nuts. H. L. Crane discussed prining; J. B. Demaree, pecan rosette; E. D. Fowler soil types and soil fertility, and G. P. Moznette, aphid control.

On account of the extensive pecan acreage and greater interest in pecan production in the Albany district, as well as because of the location of the Government laboratories there, the Association voted to make Albany the annual meeting place.

FRUIT DISEASES

Paul W. Miller, Corvallis, Ore.

"During the week ending July 1, approximately 1,000 tagged Franquette nuts were examined three times for symptoms of blight infections. New blight lesions were found on many heretofore healthy nuts so that at present about 65 percent of the tagged nuts contain blight infections. It is becoming more and more apparent that walnut bacteriosis will take a heavy toll this season in unsprayed seedling and grafted orchards.

"A survey was made during the week of damage of winter injury occasioned by the freeze which occurred early in December, 1932. Considerable die-back was found in many Williamette valley walnut orchards which appears to have been caused by winter kill. The worst case of die-back was found in an orchard which is located in a soil type having a tight compact subsoil about three feet below the ground."

"Approximately 1,000 tagged Franquette nuts were examined twice during the week for symptoms of blight infections" he wrote June 17. "About 50 percent of the tagged nuts were found infected. This wave of infection dates back, in all probability, to the rainy period which occurred on the 8th and 9th of June. It is now quite apparent that walnut bacteriosis will take a heavy toll in unsprayed seedling and grafted orchards this season....The seedling walnut crop in Oregon this year will be very short. Unfavorable weather during the time of pollination has resulted in an unusually heavy drop. It is estimated that winter kill, lack of pollination, and blight will cut the crop down to about 35 percent of a normal crop. The Franquette crop appears to be somewhat better than the seedling crop, although it is doubtful if there will be more than 50 percent of the normal yield in this variety."

On June 10 he reported that blight lesions were becoming quite prevalent on Franquette walnut leaves. "A few Franquette pistils containing blight infections were also found during the week just past. Blight has already reached epidemic proportions on certain early blooming walnut varieties. Approximately 75 percent of the nuts on two El Monte walnut trees growing in the experimental orchard at Corvallis contained blight lesions...A rainy period of considerable duration occurred during the latter part of the week. It is believed that this will result in the spread of considerable blight in unsprayed orchards. It now appears that this season will afford a good opportunity to test our spray program."

Still earlier he had written: "Walnut blight infections are now (early June) apparent on many nuts of early varieties and seedlings. The first current infection on a Franquette nut was found the week ending June 3, although very few infections have been found as yet on this variety. Blight lesions on Franquette walnut leaves, however, are very abundant."

FRUIT DISEASES

John C. Dunegan, Fayetteville, Ark.

"According to the local papers," he writes July 1, "four thousand crates of cherries have been sold this year from the Fagan orchards one mile northeast of the square at Bentonville. Prices ranged from three to four dollars a crate."

"Mr. Smith and Mr. Johnson visited the laboratory on June 22 and brought me fresh specimens from Seymour, Mo. of the bacterial disease of English Morello cherries." he had reported on June 24. "I was very glad to get these additional specimens, particularly the leaf specimens. The cherry leaf spot fungus was present on the leaves as well as spots caused by the bacterial organism, and while the symptoms on the upper surface are very similar, the spots are readily distinguishable on the lower surface. The specimens are of particular interest in connection with a discussion of the bacterial disease, which I am preparing."

"Specimens of bitter rot on immature apples of Virginia Beauty variety were received from Rogers, Ark. the middle of June. The absence of rain and the lower temperatures have probably been very beneficial in retarding the bitter rot fungus." he commented June 17, "But I expect further outbreaks when the drought is broken. There was entirely too much bitter rot on mature fruit in the district last fall to warrant an optimistic outlook about the 1933 crop if weather conditions are favorable to the bitter rot fungus. Phyllosticta solitaria was observed to be very prevalent on the leaves from non-sprayed trees in the course of collecting specimens for one of the apple leaf spot isolation experiments." On June 10 he wrote: "Apple blotch is now beginning to appear on non-sprayed trees of susceptible varieties and I have examined some Oliver specimens showing numerous infections entirely covering the young apples."

J. R. Cole, Shreveport, La.

"Temperatures here have been unseasonably low this week," says the report of June 17, "the minimum being 58° F. on Wednesday. This low temperature has probably injured cotton somewhat but has not hurt other plans materially. Temperatures are approaching normal again at the end of the week. Most parts of this section are still dry, although occasional showers fell the first part of the week in spots." On June 10th he had written: "The first part of the week, Mr. Sitton and I made a trip to Colfax, a town about 100 miles from here, where the growers are having a great deal of trouble with rosette and other diseases. We found a condition peculiar to the Red River bottoms and parts of Texas, in that the internodes were greatly shortened, giving the typical busy appearance of rosette; this was accompanied by somewhat dwarfed foliage but the usual yellowing and crinkly appearance of the leaves was either absent or rare. We gave them suggestions regarding rosette control and general cultural methods for the orchards."

FRUIT DISEASES

A. J. Riker, Madison, Wis.

"Results have been taken on the series of trials mentioned earlier which were set up to study the physiology of the crown-gall and hairy-root organisms above and below 30°C., the critical temperature for the development of crown gall. Thus far these readings have all be negative, which indicates that the critical physiological reaction has not yet been examined. While we are not in a position to say what the factor influenced by temperature may be, we do know a number of things which it is not. There is, of course, the possibility that the important temperature relation may be an action upon the host plant rather than upon the physiology of the bacteria. This, of course, will require further investigation."

M. A. Smith, Ozark Fruit Disease Laboratory June 24.

"The southwest Missouri strawberry crop according to figures and estimates obtained from shipping association managers, brought more than $750,000.00 to the district, 775 cars being moved this season, this being 175 cars more than the estimated crop...Prices generally were low, ranging from $3.00 to as low as $1.00 a crate, with a general average of $1.50. The largest shipping points in the district, all of which exceeded their pre-season estimate, were Monett, 99 cars; Anderson, 96; Sarcoxie, 94; Neosho, 92; Pierce City, 39; Butterfield, 38, and Carthage, 37 cars. Truck haulers were numerous throughout the district this season, buying direct from the growers and paying cash for the fruit."

"Last week we made the third spray application to the Morello cherry plots at Seymour, Mo.," he wrote June 10. "Cherry leaf spot is assuming epiphytotic proportions throughout this section. At the present rate of spread, it is doubtful if much foliage will remain on unsprayed trees by the time the cherries are picked...On a recent visit to an apple orchard north of Seymour, we saw the results of lime sulphur applications to heavily scabbed foliage. Severe defoliation was evident, what foliage remained showed definite burning and practically the entire applie crop had dropped."

H. F. Bergman, East Wareham, Mass.

Writing on July 1, he says: "There has not been as much opportunity this spring for the study of oxygen conditions in flooding water as there usually is because so many growers are giving up June flooding in favor of dusting for insect control (mainly for the leaf hopper vector of the false-blossom disease). Dusting with pyrethrum controls insects very effectively and there is no danger of injuring buds as is the case when flooding."

FRUIT DISEASES

Leslie Pierce, Vincennes, Ind.

"The month just ended was the hottest June within the memory of the oldest inhabitant," he writes July 1. "June had 21 days with temperatures above 90, with an average maximum for the 21 days of 96.4 degrees. July 1, with a maximum of 100.5, was the fifteenth consecutive day with high temperatures, ranging from 94 to 102. The total fainfall for the month of June measured only 0.73 inch.

"The first picking of fruit was made in some of the plantings of Transparent the latter part of the week. Premature ripening and internal breakdown caused by the high temperatures resulted in the loss of 25 per cent or more of the first picking of this variety of apple. Practically all of the fruit packed so far is very close to a two-inch minimum. Prices range from 65 cents to $1.10 per bushel. It is estimated that about 50 percent of the Transparent crop will be shipped by truck."

"Septoria leaf-spot has almost completely defoliated Lathan raspberry in most of the plantings in Knox county," he wrote June 17. "In several plantings the combination of too much water early in the season and leaf-spot defoliation has destroyed the plants. Where the plants are badly affected none of the fruit will be harvested. It seems evident that the crop will not be more than 25 percent normal. In unsprayed and poorly sprayed apple orchards, scab has caused a defoliation of from 40 to 80 percent. In extreme cases, all of the remaining foliage is completely covered with scab infection. In the only orchard examined so far this season where excellent commercial control of scab was obtained, received 10 applications of fungicides beginning with the pre-pink application...Excepting an occasional orchard where bacterial spot has caused a defoliation of 50 percent, the peach crop in this section is in good condition."

On June 10 he had written: "Cherry leaf-spot is general and severe over the entire section. Practically all of the trees in commercial plantings are so badly defoliated that it is doubtful if any of the fruit crop will be harvested. Three spray applications failed to check the disease. The experimental cherry plots at the Purdue-Vincennes farm were sprayed as soon as it was possible to get in the orchard with the small sprayer, and the trees lost 90 percent of their foliage in less than 10 days after the application was made...A moderate amount of fire blight is showing on the twigs of Jonathan, Transparent and York in all of the commercial orchards. No blossom blight occurred in this section in 1932 and 1933...Scab is responsible for a defoliation of from 40 to 90 per cent in apple orchards where the disease was not at least partially controlled. I examined a large planting of Transparent during the week in which severe scab was present on 100 percent of the fruit, with an average of at least 15 scab spots per apple. None of the fruit will be fit for market.

FRUIT DISEASES

Howard E. Parson, Spring Hill, Ala.

Writing under date of June 17, he stated: "Dry weather continues. Pecan trees planted in sandy soil and suffering severely from drought last summer, have already started to shed their leaves from the drought this year.

"In an earlier report (May 6) it was stated that there was only a small twig infection this year as compared with last. Since then sucker growth, forced out from pruning, has continued to come out and scab infection on it is very bad. Twig lesions are a serious source of carry over for scab from one year to the next.

"Notes on pecan scab: From 32.8 to 59.7 percent of the nuts on sprayed rows were infected, and 77.8 percent on the check row. This is high considering that we have had very little rain since the nuts were pollinated, but not so high considering the high percentage of leaflet infection there was early in the season.

FRUIT AND VEGETABLE HANDLING? TRANSPORTATION AND STORAGE INVESTIGATIONS.

Edwin Smith, Wenatchee, Wash.

"The industry is greatly relieved to have the Secretary's very positive and practical announcement of June 20th, regarding the new lead spray residue tolerance of .02 grains per pound," he writes in his report for the June 5-26 period.

"They would have liked a fluorine tolerance of .02 instead of .01, but now they know where they stand on fluorine and there will be a great deal more cryolite used than otherwise would have been the case. Mr. Newcomer is issuing recommendations for the use of cryolite for late-brood sprays without qualifications.. .

"Eastern Washington has had delightful weather during June, with only three warm days. A sizeable 'cherry rain' occurred on the morning of June 25th. On account of the lateness of the season, picking will not be in full swing for several days, so that cracking possibly may not be very serious."

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

H. C. Diehl, Seattle, Wash.

"Weather conditions remained quite favorable to the strawberry harvest, although from the human comfort standpoint, a return to the unusually cool weather made matters a bit uncomfortable. The physical condition of the crop is good, but the quality is poor due to the weakened condition of the plants and the lack of sunshine. Prices for frozen berries continue in the 8-10 cent range, but the market is jumpy, due to the uncertainty in the minds of buyers as to exactly what the consumer demand will be. That factor depends, of course, considerably upon the manufactured product price level that is set by the new control agencies as well as the degree to which people return to work and obtain money for spending on such 'luxuries' as preserves, jams, and soda fountain commodities.

"The selection of crosses and seedlings at the Puyallup station was continued, about 3,000 strawberry selections being under consideration. ....Considerable time was put into photographic effort, the objective being the preparation of a series of pictures showing the harvesting, handling and preparation of frozen pack strawberries in a large cooperative plant, as well as in a small grower plant."

He had written on June 24: "Prices for frozen strawberries continue on the upgrade, due mainly to short crop conditions. It is almost incredible that with strawberries at 3-1/2 to 4 cents a few weeks ago (frozen pack), present quotations, when submitted at all, ride along the crest in the neighborhood of 8 or 9 cents."

DISEASES OF TRUCK CROPS.

Writing from Greeley, Colo., Doctor Zaumeyer says: "The flea beetle injury this year to beans is not as serious as it was in 1932. It is interesting to note that these insects apparently prefer lima beans to the bush or field beans, since the injury on the former is worse than on the latter. The grasshoppers are again becoming abundant and may do considerable damage. The infestation was very heavy in 1932 but they were kept in check ... it appears that the application of poisoned bran will have to be started immediately.... The diseases of bean thus far are not serious. Mosaic can be noted in small amounts, but bacterial blight has not yet been observed. Pea diseases are causing very little if any damage. A survey made a few days ago showed only a small acreage infected with Rhizoctonia. The Fusarium diseases were practically negligible in the acreage examined. A trace of bacterial blight was found, causing no damage. The infection started very early in the growth of the plants following a hail storm, but since then the weather has not been favorable for the spread of the organism."

FRUIT AND NUT PRODUCTION

W. W. Aldrich, Medford, Ore.

"A drive around the Valley yesterday gave me the impression that in many orchards the drop of small fruits of Anjou, Bosc and Comice would continue," he writes June 12.

"All three varieties bloomed heavily and set about 15 percent of the blossoms. The Anjou drop occurred first, until at present many blocks have as many as 60 leaves per fruit. Bosc set a very heavy crop, but many of the fruits have stopped growing, and will probably drop. Comice trees seem lacking in vigor, with the leaves small and shoot growth short or lacking. Bartlett, which produced heavily last season, had a relatively light bloom this spring and now has a good commercial set of fruit, which will not need a great deal of thinning.

"During the last week the Anjou trees at the Medford Experiment Station started a second drop of small fruits. Before this drop there were about 20 leaves per fruit, but it looks now as if this drop would leave as many as 35 to 50 leaves per fruit. Thinning of the experimental plots is being delayed until the extent of this second drop can be determined.

"The excavations to determine root distribution and concentration in the Burch-Orchard plots were completed. The water table now stands at four feet below the surface. Most of the roots taken from the soil three to four feet deep were dead, and many crumbled when touched. Root concentration was greatest close to the trunk, and decreased at greater distances out from the trunk. No roots were found beyond eight feet from the trunk for a medium sized tree and beyond 10 feet for a large tree. As a result of these root studies, the soil samples for moisture determinations will be taken to a depth of three feet and at distances between four and eight feet from the trunk. Irrigation requirements for the plots will be based on moisture content of the upper two feet only."

Geo. P. Hoffman, Meridian, Miss.

"The paraffin coating of trees unquestionably has merit early in the season, but the final result is, in my opinion, yet very questionable especially on the one-year trees which were dipped at the nursery," he writes from the Pecan Field Station on June 24.

"It should be understood that paraffin coating is applied in two ways: By dipping the tree exclusive of the root, at the nursery; and by applying the paraffin with a paint brush after the trees have been set out. The paraffin used in treating 1200 of our trees was obtained from the Standard Oil Company, and was marked 125--A.M.P. We applied this

FRUIT AND NUT PRODUCTION

Geo. P. Hoffman (Continued)

to two-year-old trees, two weeks after planting. The application was readily made with a paint brush and we kept the wax in a liquid state by using a double boiler, the outside of this boiler being filled with water and placed in a charcoal pot--the pot commonly being used for the heating of flat irons. "The charcoal pot and boiler containing the paraffin could easily be carried from tree to tree. The smaller, one-year-old trees, 1200 in number, were treated by being dipped at the nursery.

"Frankly, I notice that the use of paraffin was helpful up to May 1, the beginning of the very hot period, and unquestionably contributed toward the saving of a large percentage of our trees, as almost no rain was had from the time of setting. However, I am very much concerned regarding the apparent grease or oil-soaked strip on the west side of almost every tree. I do not know of course whether or not this will be injurious but will watch this condition with very great interest. I note that where trees had side branches or have put out sufficient side branches and foliage to afford shade on the west side, this strip of grease-soaked bark, which extends from the ground to the top of the tree, has either not noticeably developed or has disappeared.

"A final application of 1/4 pound per tree of sulphate of ammonia was applied and hoed in between June 19 and 22."

B. G. Sitton and J. L. Pelham, Shreveport, La.

Report of July 1: "Wednesday and Thursday a trip was made to the Ferguson orchard at Toledo, Tex. for observations on the irrigation plot and to set up the pump so that irrigation could be done without delay when needed. There has been a very heavy crop of nuts in this orchard, and the crop remaining is too scattered to estimate whether there is a difference on the irrigated plots and the dry plots. However, in the blossoming of the trees, it was quite evident that the trees receiving water last fall blossomed more profusely than those which did not receive water. Rains have occurred in sufficient quantity and frequently enough to make irrigation unnecessary so far this spring.

"Quite a good deal of rosette has been showing over the station as a whole, and all the trees were sprayed with zinc sulfate, as recommended by Doctor Alben and Mr. Cole for rosette."

FRUIT AND NUT PRODUCTION

H. L. Crane, Albany, Ga.

"During the week inspection was made of the trees treated with varying amounts and methods of application of zinc sulphate," he writes June 17. "It was gratifying to observe that in most cases the treated trees show evidence of partial recovery from rosette. There is, however, much less rosette in this territory this year than there was last year. It is still too early to tell much about the effects that zinc treatments will have on control of rosette."

July 1 he wrote: "On the yojng trees, up to six-years old, there has been a tremendous amount of leaf scorch and defoliation in the orchards at Philema. This is thought to be due to chlorotic foliage and to the very dry weather and high temperatures....A visit was made to a large tung-oil and pecan orchard belonging to Harry Waugh. The tung trees in this orchard show chlorosis. The permanent trees are pecans and in the areas where tung-oil trees show chlorosis the pecan trees are rosetted. The tung-oil leave s on such chlorotic trees are mottled in color and much smaller in size than normal leaves. These chlorotic leaves break down, especially in those areas showing chlorosis, and the leaves are now being shed in large quantities. This condition was called to the attention of Mr. Demaree and during the week sprays were applied to determine the effects on chlorotic leaves, and also the concentration of chemicals which could safely be applied without serious injury to the leaves....Due to the extremely dry weather during June (the dryest June in Albany history) there has been heavy shedding of nuts in some orchards. Trees located on heavy soils and in bottoms which have dried out are now shedding their leaves."

"June 19, Dodge and I went to the Simpson-McCord orchards to start thinning pecans. We found this orchard suffering from dry weather to such an extent that we were afraid to thin the crop on any of the trees. Very few nuts were dropping at this time, but the foliage had begun to turn yellow and some of it to fall. By the end of the week the nuts were dropping and in large quantities. We are therefore forced to delay thinning until after the rains set in. What is true of this orchard is likewise true of other orchards in the district. At Cairo, Ga. they had no rain for eight weeks, causing a very heavy drop of pecans."

He also writes of a vist by Moznette, Demaree, Flowler and himself, at the request of growers, to orchards in the Monticello, Fla. district. "We visited the Monticello Nursery Company, in whose nurseries a block of badly rosetted trees was treated with zinc sulphate in July, 1932. The zinc was applied to the soil and a light application was made. The recovery of the trees has been remarkable and they have made fully 100 percent more growth than similar blocks reciving iron sulphate or no treatment at all. Not only have the trees made more growth, but rosette has practically disappeared and the leaves are large, smooth and dark green, while the untreated area is still badly rosetted."

FRUIT AND NUT PRODUCTION

A. D. Shamel, Riverside, Calif.

"We have obtained a line on the cause of the decrease of yields that have invariably followed our brushing-out tests," he writes June 19. "While instructions are usually given to pruners not to remove any living branches during this work, they always cut out a little living leaf bearing growth. In looking at the piles of dead small branches that have been cut out, one can hardly see a living leaf at first glance, but we counted them in our plot this time and found that an average of about 1,000 leaves per tree had been cut out, to say nothing of the partly broken and badly injured living inside small branches where the men had climbed around the inside of the trees in order to brush them out.

"We found upon an examination of the first top limb cut out in order to let light in, a total of about 25,000 leaves. From this count we estimated that this thirty-year-old Washington Navel tree had a total of about 250,000 to 300,000 leaves, many more than we thought to be the case. I noticed a report of an orange tree leaf count some years ago in Florida, a tree of about the age of our pruning plot trees, I think, where a total of only about 60,000 leaves were found. If this is correct, it is apparent that our orange trees have many more leaves than the Florida grown trees. I would like to count all of the leaves on one of our trees sometime and will do so at the first opportunity. I think that the leaves on our orange trees remain about three years before they fall. We are beginning to become deeply interested in the relation of leaf condition to citrus tree growth and fruiting.....

"I mentioned in an earlier report an early maturing Washington Navel orange strain. This strain originated as a limb sport in an otherwise apparently normal tree. Buds from the parent limb sport were top-worked in one-half of a normal Washington Navel tree top located in the Arlington district, six years ago. The growth from these buds fruited the second year after budding and produced very early maturing oranges in comparison with those on the normal branches, as was the case in the parent tree.... The oranges of the early strain are now one inch in diameter as compared with one-quarter inch for the normal ones at the same location. A study of the young fruits on the first top-worked Navel tree, the top-worked St. Michael trees, and the small orchard trees, demonstrates unmistakably the fact that the oranges of the early maturing strain are much larger, four to five times as large, than the comparative normal ones...

I have noticed this season, particularly in the crops of Hart Tardiff strain of the Valencia orange, and the Marsh grapefruit at Corona, a much larger than usual amount of fruit with raised or sunken sections or both, fluted, ribbed or ridged rinds. Since first observing this, I have made enquiry of some growers in nearby districts and they report that this condition appears to be general....I have noticed that during some seasons we have found more of these abnormal fruits in the crops we have studied than in other years, but not nearly so marked as is the case at present."

FRUIT AND NUT PRODUCTION

C. P. Harley, Wenatchee, Wash.

"The cherry harvest is on," he writes June 28. "In general, the quality of our cherries this year is very good, although a rather heavy rain Sunday morning caused many 'splits' in some sections. The percentage of split fruits run from 20 to 30, depending on locality. " A .36 inch rainfall, besides being unkind to the cherry crop, is also disconcerting to us in our soil moisture experiments. Our last irrigation in the dry plots was applied June 13, and the upper soil was just starting to dry out. We were hoping to reach the wilting percentage of the six-foot level much earlier than last year, but if we continue to have heavy rains our prospects may not be so good.

"Our earlier reports on 'little leaf' may have been a little premature. Recent observations indicate that in two of our zinc sulphate treated trees the condition has been practically corrected. The recovery was evident to us only within the last two weeks, and so far it has only occurred on two trees treated rather late in the spring and which received rather heavy doses. Treatments in March, consiting of eight to ten holes per tree with 1-1/2 grams of zinc sulphate per hole, have not shown any marked recovery to date. One of the trees which showed a rather striking recovery lost practically all of its leaves following a treatment of 12 holes with 2 grams per hole. However, it is now growing new leaves and appears to be free from the little leaf condition.

"These results are very encouraging to us, for little leaf is increasing each year and has reached a point of alarming severity in many orchards. Also, since Mr. Reeves has treated a hundred or more trees without any apparent results, we began to wonder if our little leaf was a different sort of animal from the one found in California and elsewhere. It appears now that it is one and the same, but requires a rather severe jolt to bring them out of it."

POTATO INVESTIGATIONS

W. C. Edmundson writes from Greeley, Colo. on July 3 that the weather has been hot, ranging from 95 to 100. On July 2, .19 of an inch of rain fell, with .84 inch being recorded at the Greeley Sugar Factory. "One mile west of the station the crops were badly damaged by hail, the area damaged extending about three miles north and south, and two east and west. The sugar beets will recover and produce a fair crop. Beans and grain do not recover well after being injured by hail, and will probably be an almost total loss."

BULB INVESTIGATIONS

"Things are happening thick and fast here now," is the word from Doctor Griffiths at Bellingham, Wash., July 2. "The earliest lilies are just going out of blossom and four groups of hybrids--the Regal, Humboldt, Dalhansoni and Martagon--will be in their prime during the next two weeks. Indeed, the Dalhansoni is about over now, and most of the selections have been crossed again. The Parryi-Washingtonianum group is already worked.

"This Sunday's employment has consisted of two hours' pollenizing lilies, with more than 100 marking tags used up; mostly on Dalhansoni second generation crosses. A critical examination was made of our naturalized plantings of daffodils, correspondence cleaned up, photographs taken--and writing to John Ferrall!

"Our big Regal-Leucanthum hybrids are standing 8 feet high and full of buds. They will be 8 to 9 feet when in full blossom and some bearing 50 buds. Three parties have been in to see them recently. A delegation from British Columbia was in yesterday, one from California is expected tomorrow, and several more are expected when these lilies are in blossom.

"Our tulips are dug and cleaned. We are waiting for the Darwins to ripen. We may dig them the last of this week; then the daffodils will be ready. The hyacinths were taken out a week or more ago and broken apart yesterday. All we have here is last year's propagation, which has made a marvelous growth. Practically all the propagation will blossom the first year out of the matrix, and be ready to market as miniatures at the end of the second growing season."

Doctor Griffiths actually sent on a note before this--June 18--in which he told of the cool weather at Bellingham on his arrival, June 17, when the thermometer at noon registered 71 and that night dropped to 33. Unfortunately, he added: "BVDs are uncomfortable, and must be exchanged for heavier fabrics." Of course, we couldn't publish statements of that sort--at least so it seemed to the Editor at first thought. But, upon consideration, it appears that this information is really in the interest of the Government and apt to prove valuable to our workers in the Pacific Northwest--especially in view of the added suggestion Doctor Griffiths gives: "I am reminded," he wrote, "of the advice given me the first time I planned to come out to the Bellingham country. They told me to purchase the heaviest wool underwear in autumn. Then by spring it would be just thin enough for the summer!"

These comments on weather and intimate apparel have had their importance emphasized by the coolest weather of a quarter of a century in the Washington section (Washington, D.C.) around July 4, some of our workers who went to the mountains over the holiday, and failing toinclude wool garments, having narrowly escaped death from freezing.

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THE DIVISION OF
FRUIT AND VEGETABLE CROP DISEASES

SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.

John A. Ferrall, Editor

This NEWS LETTER is for distribution only to employees of the Division, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of firld workers and others represent, of course, their personal opinions, and are not necessarily the official or final word on the subjects.

Vol. V Washington, D. C., August 1, 1933 No. 15

Self-Supporting Investigations. One of the leading agricultural papers of the Pacific Coast stated some time ago that there really is no such thing as a self-supporting State or Federal agency--that the cost of the work of all such agencies must be paid by the people through taxes of one sort of another. This statement may be true in the sense that agricultural research, for example, turns into the Treasury no actual cash--except from the sales of surplus products. But it is hardly true in the general sense of the term self-supporting, for research pays for itself over and over again, and any work which returns its cost, in cash or other ways, is self-supporting.

The NEWS LETTER, of course, has from time to time discussed some of the amazing dividends paid by the investigations of our Division. I find, somewhat to my astonishment, that the lowly peanut actually pays in annual dividends something like twice the cost of all our work. In fact, the peanut is not nearly the lowly object I had believed it to be, for it is the basis of a $25,000,000.00-a-year industry. Yet it seems that very little work on the peanut and its culture has been done outside our Division though we cooperate to the fullest possible extent with various State Experiment Stations.

Over a period of years our varietal adaptation studies have resulted in recommendations now generally followed by growers of peanuts. On the basis of a statement made by commercial interests in Georgia, too, it is estimated that from one hundred to one hundred and fifty thousand acres of the Division's new peanut variety (Spanish 18-28) are being grown.

Just what this new variety means is indicated by the fact that its superiority to ordinary sorts is such that at the present low prices it is consistently worth from one to three dollars an acre more than the sorts formerly grown--and still generally used. This represents at present an increased annual return to peanut growers in this region alone of something like $300,000.00 a year, a total which will increase enormously as the new variety replaces the older sorts.

A conservative estimate of the present annual value of the varieties developed and released in connection with our work--the annual value over and above that of the standard sorts formerly grown, that is--puts the figure at $2,500,000.00 or about twice the annual cost of all of the work of the Division of Fruit and Vegetable Crops and Diseases. The peanut investigations, then, are not only self-supporting, but capable of taking care of the entire family, including the in-laws!

We have mentioned, too, from time to time the work on walnut pollination which Milo N. Wood has been doing more or less incidentally in connection with his general investigations. The practicability of artificially cross-pollinating Persian walnuts, has not only been demonstrated, but we have shown that an increase of yield amounting to anywhere from $25.00 to $400.00 an acre may be secured--and at a pollinating cost of from $1.50 to $3.00 an acre. In fact, some walnut orchards never yielded a profit until this artificial cross-pollination was introduced into practice. The work is reminiscent in a way of Dr. Walter T. Swingle's investigations in connection with Smyrna figs. The Smyrna trees flourished in California, but not a pound of fruit was produced until Doctor Swingle discovered the need for, and introduced the so-called "fig wasp" necessary for the pollination of figs of the Smyrna type.

It is even simpler to demonstrate the self-supporting nature of our work in connection with the handling, transportation and storage investigations, because when we demonstrate that precooled pears, for example, can be shipped as satisfactorily in a 720-box carload as in the customary 520-box load, we open the way for an immediate reduction in refrigeration costs. In fact this piece of work has already resulted in a reduction of 14 cents per box in refrigerating costs in transit, meaning a saving of about half a million dollars a year to the Northwestern pear industry. It doesn't need any argument to convince these growers that our work is self-supporting.

Vegetable utilization studies have paid for themselves many times over by the single demonstration that variety is quite often a basic factor in canned products--that the fact that one variety of pumpkin makes an excellent canned product is no proof that all pumpkins may be canned to advantage. Some varieties make a very inferior product--and having this information at their disposal saves canners thousands of dollars every year. As we mentioned recently in the NEWS LETTER, one producer lost $200,000 through engaging in the large scale packing of varieties not adapted to that use. We are helping others avoid such losses.

FRUIT DISEASES

Lee M. Hutchins, Fort Valley, Ga.

"Effects of prolonged dormancy this year are mild compared with 1932," he writes on July 4, "but they are nevertheless important. From Thomaston to Macon and northward the peak of the crop movement has been and will continue to be earlier by varieties than at Fort Valley and southward. This week will probably see scattered shipments of Elbertas over the district from Macon and Thomaston northward to Tennessee. In a normal year, Fort Valley should begin shipping Elbertas about the fourth of July, and there should be sufficient movement so that this variety would be quoted on the market. About July 10th, as a rule, carlot shipments of Elbertas should be under way and the peak of the movement should be anywhere from July 10th to 20th. This year, Elbertas from Fort Valley will not even begin to move until July 15th. We will probably be shipping Elbertas as late as August 1st. The last shipment of this variety from Georgia, this year, will probably be from the southern sections of the State.

"Hiley will reach the peak of movement from Fort Valley on July 3rd and 4th. There are very few Hileys north of Macon because, as previously explained, they had experienced sufficient cold to induce spring development of flower buds before our heavy freeze of February 9th, and a large percentage of the crop was killed; the Hileys at Fort Valley and southward were held back by prolonged dormancy and were much less severely injured by the freeze. The peak movement for Hileys for Fort Valley is perhaps delayed ten days on account of prolonged dormancy, whereas for Elbertas (a more susceptible variety) the peak movement may be delayed about twenty days. From Thomaston to Newnan and across to Monticello, the Elberta crop is normal this year, both in quantity and in time of ripening. North of Monticello, the crop is normal in time but small in quantity, temperatures were lower in North Georgia and more of the buds were killed.

"Elbertas at Fort Valley will attain approximately 40% of a normal crop, and there is much variation in form and quality of fruit. The fruits appear to be too long and are not uniform in shape. We attribute this to the fact that Elbertas just missed a failure on account of the prolonged dormancy. At Montezuma, about 25 miles south of Fort Valley, prolonged dormancy has caused all varieties, even the Hiley, to be later than at Fort Valley, and the fruit of that section is not equal to that of Fort Valley in either quantity or quality. Elbertas at Montezuma will not average much over 10% of a crop. This illustrates the point previously made that a difference of 25 miles in latitude or its temperature equivalent in elevation is important in years when prolonged dormancy is visited upon this section....."

FRUIT DISEASES

John C. Dunegan, Fayetteville, Ark.

"The grape crop of the Arkansas-Missouri Ozarks will be a large one this year despite the June drought, according to W. L. English, supervisor of agriculture for the Frisco lines. Mr. English estimates that there will be approximately 1420 cars from the Ozarks territory. Vines are in excellent condition and a big harvest is expected.

"The Ozarks-grown strawberries this year sold for approximately $1,000,000.00, this being for the entire Frisco shipping area in the Two-State territory. The shipment ended with the month of June, and according to figures supplied by Mr. English, approximated 800 cars, with Monett the largest shipping point with 107 cars. Ozarks-grown berries were shipped in iced cars to points throughout the United States and Canada, and the quality this year was exceptionally good. Estimated value would have been over a million had prices not declines as volume increased."

On July 15th he added: "Another week of drought and while it has not rained here at Fayetteville, local showers in the vicinity have brought welcomed lower temperatures several times during the week. It is needless to say that lack of water is becoming acute throughout the entire district. Many of the apple trees have a wilted appearance, and sunburn of the fruit is beginning to appear, while the local gardens and the truck crops are literally burning up. A serious aspect of the problem is that many of the farm folks will have little or nothing to can from their gardens for use during the coming winter.

"Assurance that progress is being made in a move to bring a 35 per-cent reduction in freight rates on grapes in time to be applied to this year's grape crop was given members of the Ozark Fruit Growers' Association in session July 11 at Monett, by Charles Redden of St. Louis, representative of the Frisco railway's agricultural department, and A.L. Cox of Joplin, Kansas City Southern representative."

W. F. Bergman, East Wareham, Mass.

"Some observations have been made on a disease of cultivated blueberries which has become quite serious on one field. Miss Wilcox has made a number of isolations and secures Alternaria nearly always.

"Crown gall is prevalent in the same field, but the crown gall plants do not show any signs of the Alternaria (?) disease and the fungus diseased plants show no lesions of crown gall."

(Cranberry Disease Field Laboratory, July 15, 1933.)

FRUIT DISEASES

Leslie Pierce, Vincennes, Ind.

"The first picking of Transparent apples was completed in most of the orchards by the end of the week. An average of about 60 percent of the first pickings was fit to pack as shipping stock. Scab, heat injury and small size are the reasons for this 40 percent loss. The price on first grade Transparent had fallen to 90 cents per bushel basket by the end of the week, the lower grades were hard to move at any price and were being dumped as fast as they became over-ripe from standing in the packing sheds.

"A rain measuring 0.38 inch which fell late in the afternoon of July 2 has greatly improved the conditions of the Purdue Vincennes peach orchard. The process of hardening the pits has been completed and the fruit is beginning to increase in size very rapidly. Most of the Hale fruit will average more than two inches in diameter.

"The harvest of the cantaloupe crop in the Decker and Oaktown sections was commenced the latter part of the week of July 2-8. First grade melons sold for as high as $2.75 per crate.

"After reaching a maximum of 103.5 degrees at 4:00 p.m. on July 2, the long period of high temperatures beginning June 17 was broken by a heavy shower of 0.39 inch. Moderate day temperatures and cool nights prevailed during the remainder of the week. Although the rainfall did not cover the entire region, crops of all kinds were greatly benefitted by the lowering of the temperature."

M. A. Smith, Ozark Fruit Disease Laboratory.

"During the week the Marionville and Aurora fruit sections received a 3-1/2-inch rain," he writes on July 15.

"This rain was very timely since it came at a time when fruit trees were beginning to suffer from the drought of the past month."

POTATO INVESTIGATIONS.

"One afternoon last week," writes W. C. Edmundson from Greeley, Colo. on July 19, "Mr. Schaal and I visited the early potato producing section near Gilcrest. Little psylid injury was in evidence, although some fields showed symptoms of the disease and some psylid were found on the vines. One field that had been sprayed by Mr. Daniels of the Agricultural college (with lime-sulphur) gave evidence that the spraying had reduced the psylid injury, the check rows being rather badly infected with psylid yellows...The early potato acreage has been reduced this year, but the yield will be larger than that secured in the past two years."

CROP PHYSIOLOGY AND BREEDING INVESTIGATIONS

New and Non-Competitive Crops. The present condition of agriculture, and the opening up of new crop territory in connection with the Boulder Dam and Muscle Shoals projects, has brought into vastly increased notice the work directed by Dr. Walter T. Swingle on the breeding and testing of new and non-competitive crops. Discussing this work in the Yearbook for 1933, the Secretary points out its desirability since the establishment of such crops, takes the land thus planted out of competition with standard farm crops.

It is not difficult to find such crops. As the Secretary's report says: "In recent years the department has introduced into this country and has tested many new crops to determine their adaptability to soil, climatic and market conditions here. Such work is indispensable. Volunteer cooperators can not do it efficiently in its early stages. It is a task for the expert, and it takes time." This refers, of course, to the satisfactory establishment of the crop in commercial culture--something quite different from the mere introduction of plants from foreign countries. It is this phase of the work, of course, in which Doctor Swingle and his associates are interested.

As to the possibility of finding such new and non-competitive crops; The Yearbook's figures on imports show that for 1929-1930, an approximately normal year, our total vegetable products imports amounted to $1,214,176,000 and this in spite of the fact that we have in the United States a greater range of soils and climates than are to be found in any other civilized and highly developed country. We could not, of course, grow all of the things we now import. Some of those, too, which could be grown in this country, could not, for one reason or another, be produced with profit. But a general survey by Doctor Swingle indicates that we could, and should produce the crops necessary to replace a third of these imports---amounting to about $400,000,000.00 a year! These crops, he believes, could be grown with profit at the prices we now pay for the imported material.

Of course, as the Secretary's report shows, Doctor Swingle has already demonstrated the possibility of establishing such new and non-competitive crops. "Date culture, for example, has outstanding possibilities," says the report. "This country at present imports more than 20 times as many dates as it grows. The date industry, scarcely 10 years old in the United States, originated with the introduction by the department of the choicest dates from Old World gardens. It received an immense impetus when the department's scientists developed a method of propagating date palms free from insect pests and fungous diseases. It received another stimulus in 1925 when investigators ascertained that date ripening can be controlled beneficially by using special kinds of pollen. In regions having summers too short or too cool to permit the

ordinary maturing of dates, growers can use a pollen causing earlier ripening. In regions where excessive heat tends to make the crop ripen too early, they can use a pollen causing late ripening. Assisted by these discoveries, American growers now produce several million pounds of fancy dates annually. These dates are so superior in quality that they have opened new markets, without as yet diminishing the demand for imported dates. The date industry may therefore be expanded greatly without harm, and indeed with benefit to American agricultural interests in general, since the grower who puts land into dates withdraws it from other uses...."

The date is one of the most useful of foods, and in some parts of the world is actually used to a greater extant than we use bread and potatoes in this country. It actually contains all of the elements except proteids (1.9 percent protein, according to the Atwater bulletin on food composition) which a balanced diet calls for--fats, salts and carbohydrates, and all in available form for the human system. For years we have been importing from 50 to 60 million pounds of dates annually, selling at retail for about $4,000,000.00 to $6,000,000.00, but not until Doctor Swingle started his investigations was there any serious effort made to establish this fruit into commercial culture in the United States.

Our associate, W. R. Barger, who is making a study of date handling, reported to the NEWS LETTER last month that the 1932-33 crop of dates in the Coachella Valley of California alone was estimated to be something like 4,500,000 pounds. Yet when Doctor Swingle's work was started, the date palm was simply a botanical curiosity in this country, making it stand out as a most striking illustration of the possibility of establishing such new and non-competitive crops. It seems reasonable to assume that ultimately the American growers will produce at home all of the dates now imported. Better still, by specializing on quality and demonstrating that we can produce dates of the very highest quality, we shall pave the way for a much greater consumption of this splendid food product. The per capita use of dates in the Unites is not quite low--about half that of Canada and a third that of Great Britain.

The date palm, too, is an illustration of the difficulties involved in the establishment of new crops. Scientific studies are needed to take the place of the great reserve of accumulated experience available in the case of such crops in the countries where they have been grown for decades or even centuries. Our farmers and orchardists start out under a decided handicap of inexperience in handling the crop and must be guided carefully. The Deglet Noor variety, one of the very finest of the dates, originally considered especially promising for culture in the drier hot irrigated valleys of California and Arizona failed to produce a pound of fruit of marketable quality for eight years after the palms began to bear in this country. Scientific studies were necessary to work out correct methods of fruit production. Similar difficulties must be expected with other new crops. The self-starting crops, so to speak, have

already been introduced into commercial culture in the United States. All new and non-competitive crops proposed for establishment must be studied carefully in advance of their introduction to determine as accurately as possible their soil, climatic and cultural needs. This was especially important in the case of the date palm which, unlike most fruit trees, cannot be budded or grafted. If the wrong variety is planted it must be dug up--or allowed to grow as a weed.

Another promising new and non-competitive crop established in connection with Doctor Swingle's work is the culture of figs of the Smyrna type. California alone now produces about $500,000.00 worth of these annually. Although the trees grew well, not a pound of fruit was produced until Doctor Swingle introduced the so-called "fig wasp" necessary for the pollination of figs of this type.

We import in normal years about $1,000,000.00 worth of pistache nuts each year, this being the most expensive nut brought in from the Old World. We have already demonstrated the possibility of growing pistaches in this country.

Every year we import around $10,000,000.00 worth of olive oil which could and should be produced in the United States. New methods of culture and new varieties of oil olives are needed if we are to produce olive oil at a profit, but careful studies in Tunis by Dr. Thomas H. Kearney of our Bureau, and in Arizona and California by Dr. Silas C. Mason, associated with Doctor Swingle's work for many years, show that oil olives can be grown in southern California and possibly in Arizona--and on land too dry to grow ordinary fruit trees. Under the circumstances it is believed by Doctor Swingle that the olive oil now imported from abroad could be produced in this country if proper experimental work is started to determine the best varieties and to work out the proper methods of cultivation, handling, etc.

The cork oak succeeds well in many parts of the United States, yet our annual importations of cork oak have totaled as much as $10,000,000 ($9,938,000.00 in 1928), with perhaps as much as 80 percent of the importation in the unmanufactured condition. It is believed that much if not all of the imported cork oak could be produced with profit by American growers if work could be started on the breeding of superior strains which might be grafted on oak trees growing in the border States from California through to Georgia and Florida. The lychee is one of the most delicious fruits produced in China--it can be grown in Florida and California. Confectioners' almonds, of which we sometimes import $5,000,000 or more annually, could be grown in the United States, etc.

Certainly with a goal of replacing some $400,000,000.00 of annual vegetable importations, here is an enticing field of scientific research, with possibilities for amazing dividends.

FRUIT AND NUT PRODUCTION

Elmer Snyder, Fresno, Calif.

"One cannot fail to be impressed with the numerous wild vines of very vigorous growth through the Gulf States, the preponderance of Riparia vines in the North Atlantic and New England sections, and the almost total lack of wild vines in the North Central prairie states." he writes from Fresno July 8, after his return from a trip to Washington, D. C. and points East and South. "By far the most important item noted was the occurrence of phylloxera insects on the roots of Concord grapes in commercial plantings in New York. While the vines have undoubtedly survived for a long time with phylloxera on the roots, the insects were causing damage to the roots and were there for 'no good purpose.' Comparative yields of Concord on its own roots and grafted on the better stocks resistant to phylloxera, such as the tests started at the Horticultural Farm, should give some valuable information on the effects of phylloxera.

"While the growth conditions of the vineyards in California appear better than for several years, the reports from various parts of the State indicate that the crop is below normal in quantity. Spring frosts in the Northern sections and in small local areas in the San Joaquin valley, combined with cutworm injury as the vines started to grow have all tended to reduce this season's crop prospects. A combination of late starting and deficiency departure from normal temperature has tended to delay the prospective date of ripening."

H. L. Crane, Albany, Ga.

"The most outstanding results noted were found in the Bennett-Cox orchards where we have a rosette control experiment," he writes on July 8, discussing an examination of experiments under way. "The pecan trees which have received the heavy soil applications of zinc sulphate have made remarkable improvement. The trees have made excellent growth, the foliage is dark green and shows little evidence of rosette, and there will be no dieback on these trees this year. The check trees are rosetting badly and some of them have already shed a portion of their leaves and dieback has occurred. The results secured so far from zinc sulphate as a control for rosette are very gratifying,...On Friday morning Mr. Demaree and I visited the Simpson-McCord orchards, where it was reported that a heavy drop of pecans was taking place because of drouth. Here we found that the pecan trees in the low places in the orchard had not only shed all of the nuts but in some cases, fully 75 percent of the leaves. The soil in these low places consists of a heavy clay. Portions of the orchard located on good soil showed no evidence of water deficiency. Because of extremely dry weather their peach crop has been late in ripening and the peaches have not filled out as they should under normal conditions. In this orchard they have sustained large losses from damage by stink-bug, as fully 50 percent of the total crop has been damaged."

Pecan Rosette may "kick the bucket." According to the Press Service's comments on a paper presented at the meeting of the Texas Pecan Growers at Corsicana, Tex., July 12, pecan rosette not only appears almost ready to "kick the bucket," and pass out, but an ordinary galvanized water bucket provided the clue which has enabled us to discover the cause and make notable progress in devising a cure for this serious disease of pecans. The paper summarized the work of J. R. Cole, C. L. Smith and B. G. Sitton of our Division, and A. O. Alben of the Bureau of Chemistry and Soils.

"The galvanized water bucket entered the picture in the fall of 1931 when Mr. Alban and Mr. Cole were experimenting with dips and sprays as possible methods of control. By dipping rosetted leaves in a solution of iron sulphate they were able to prevent rosette on young leaves and to improve the condition of diseased leaves. Consequently they sprayed trees the next season with iron sulphate, but were disappointed with results. Checking back on the analysis of the solution they had used successfully in 1931, they discovered that zinc was one of several impurities present in small quantities. They also recalled that when they dipped the leaves they had used a galvanized iron pail as a convenient container for the dip, and conjectured that some of the zinc in the galvanic coating might have dissolved and displaced some of the iron in the solution. They tested solutions of zinc sulphate and solutions of the other impurities. The zinc sulphate solution was effective, the others were not. Zinc sulphate also has the merit of being a relatively cheap chemical, making it economically practical as a remedy."

Zinc sulphate is being used in three ways to cure or control rosette: Spraying the trees with a solution containing the zinc; the direct injection of zinc salts into the trunk of the tree, a method corresponding roughly to the use of hypodermic injections in human medicine; and the direct application of zinc sulphate to the soil. All three methods are promising. The indications are, too, that it may be possible to control rosette by adding a small proportion of zinc sulphate to a regular commercial fertilizer, or apply it as a top dressing to the soil.

"Results have indicated clearly that pecan rosette is a nutritional disease. It is one of a group of diseases of plants which long confounded scientific investigators and which only in recent years have been revealed as resulting from a lack of certain minerals in the soil. Sometimes the addition of only a trifling quantity of the missing mineral will correct the condition. Results from use of zinc on rosetted pecan trees are in accord with investigations on rosette or little leaf of fruit trees in California, which condition has also been cured by the use of zinc salts."

From which it appears that I have really given this page the wrong heading. Instead of "Pecan rosette may kick the bucket," I should have written: BUCKET KICKS PECAN ROSETTE!

BULB INVESTIGATIONS

"It was my privilege and great pleasure to spend the last weekend with the lily growers of Vashon Island," writes David Griffiths from Bellingham, Wash., on July 11. "I left Bellingham at noon Saturday and returned Sunday night, spending practically all of Sunday at the lily show and on the farms of growers near the north end of the island.

"It is of interest that these people organized the first lily growers association in this country--or any other, so far as we know. They advertise 'Lily-land' and look upon their abode as a lily island where there are a number of commercial growers, many more that make a specialty of growing lilies, and a general population that is becoming lily conscious and feature the plants about their dwellings.

"It is a wonderful sight to behold regal lilies grown by the acre. The shining red buds and later the white-yellow throated flowers make a wonderful vista. Then each of these growers has a collection of other desirable lilies of greater or less magnitude coming on. In other words, each of them is working up a stock of other desirable lilies. It was particularly gratifying to see Henry's lily and that chastest of all species, Martagon album, succeeding admirably. Of course, the Madonna and the Nankeen are everywhere, and all the California species seem to succeed better than at home.

"The lily show was a grand success, both in its quality and its public recognition. The hall was comfortably filled every time I was in and non-island people predominated. This show is becoming a feature looked forward to in the region.

"Those having the show in charge deserve a lot of credit for the arrangement of the material and the individual exhibitors accomplished much more than would be expected. There were shown in full blossom a total of 25 to 30 varieties. It was reported that one grower had 20 in his exhibit. Another went in for off-season varieties and brought in lilies that had been blossomed ahead of time under dwelling conditions. Of course the regal was the predominating species and great tubs of it were placed in prominent positions.

"The growers are not only producing but they are improving the lily in more ways than one. Some are cross pollinating and growing hybrid progenies, others are making selections true to type of the variable species. I was surprised to find the variations which have been segregated of the regal by one grower. We do not ordinarily think of the regal as a variable lily, for it is remarkably uniform, but already in the short space of 20 years since it has been among us there are recognized by astute growers, white regals, red regals, yellow regals, and ordinary regals, besides a number of hybrids."

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

W. T. Pentzer, Fresno, Calif.

"The opening price for grapes this season was not quite as high as last season, "he writes on July 11, "but the prices have held up fairly well so far. The Coachella Valley grapes are reported by the shippers to be higher in acid content than usual and some of our early samples seemed to verify this belief insofar as taste was concerned.

"Grape maturity studies so far indicate that the Balling-acid ratio is a better standard than either Balling, acidity, or pH alone, in the case of Thompson Seedless and Malaga, the two varieties which reach the market in the most unpalatable condition. In 1932, the coefficient of correlation between palatability as judged by a tasting jury and Balling was .684 ± .062 for 230 samples of Thompsons and .795 ± .016 for palatability and Balling-acid ratio for these same samples. In 1931, the coefficients of correlation for palatability and Balling and palatability and Balling-acid ratio were .581 ± .062 and .643 ± .055 respectively. A ratio of Balling to acid of slightly less than 25:1 would seem most desirable for Thompson Seedless, and for Malaga a ratio of about 30:1 would admit very few unpalatable samples of grapes.

"Freezing storage of Mission figs has been started and some samples of Youngberries have also been frozen for the information of local growers who freeze their surplus berries this season. Some apricots will be frozen next week in cooperation with the California Canners League."

H. C. Diehl, Seattle, Wash. July 11.

"Prices for barrelled berries continue in the 6 to 8 cents per pound range, but the demand is not strong or sustained, as one might expect in low tonnage market. The buyers do not seem to be taking hold as yet, influenced presumably by the unsettled, although somewhat cheering business outlook, as well as by the indecision regarding the type or extent of Government industrial control."

Under date of July 18, he wrote: "The strawberry harvest is practically ended. The barrelled strawberry estimate is for 35,000 fifty-gallon barrels, compared with 60,000 to 65,000 annually during the last two years. Prices for frozen strawberries are at 8 cents per pound compared with 3-1/2 cents a few months ago, and may even go to 10 cents.

"The quality of the berries is fairly good. The favorable harvesting weather materially helped in maintaining whatever chances for quality were inherently in the berries. The microbiological picture should be favorable because there was little or no rain and no long hot spells to interfere with picking or glut the packing plants with over-ripe fruit."

ADMINISTRATIVE NOTES

Terminations of Contracts — Attention is called to the necessity for notifying the Business Office when telephone or public utility contracts are terminated. A number of instances have occurred recently where such contracts have been terminated in the field without informing the Business Office and much confusion has resulted, Inasmuch as the Bureau Office of Accounts, being unaware of the terminations, has been seeking information as to why vouchers have not been submitted. Therefore, in future when you anticipate discontinuing telephone or public utility services it is requested that you advise the Business Office, in advance if possible, of the exact date such service will be stopped, and the contract terminated, in order that notification may be given the Office of Accounts and the records of the Business Office adjusted accordingly.

When terminating short term rental agreements before the expiration of the date of the agreement, it is necessary to secure and forward immediately to the Business Office a statement in writing from the contractor to the effect that he has been notified and is agreeable to the termination of the contract on the date specified. The following sample statement is suggested as furnishing the required information: "This is to certify that the undersigned has been duly notified and concurs in the termination on _____19__, of contract with the Bureau of Plant Industry, U. S. Department of Agriculture, covering the rental of _____

_____ _____

(Contractor)

Date _____

Emergency Relief. — Writing to Doctor Taylor under date of July 7, Mr. Paul H. Appleby, Assistant to the Secretary, says: "Mr. Gil Carrington of the Federal Emergency Relief Administration has asked for special cooperation from the Department of Agriculture. Mr. Carrington wishes to be informed of all cases of rural destitution as they occur, rather than after they have developed into more tragic proportions. I am therefore asking that each Bureau keep on the lookout for instances of this sort reported in their mail, and send reports to me for transmittal to Mr. Carrington. It is very important that the relief work be coordinated with the general agricultural department policy, and the cooperation Mr. Carrington offers, therefore, is much to be appreciated. Your interest will be very helpful."

If such cases come to your notice, it will be appreciated if you will notify Mr. Schoenhals so that they may be reported to Mr. Appleby through Doctor Taylor.

Vol. 5, No. 15 August 1, 1933

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R.

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.

John A. Ferrall, Editor

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Vol. V. Washington, D. C., August 15, 1933 No. 16

Agriculture and Social Control. One of the new jobs which modern conditions have put before the worker for agricultural improvement, is that of developing the machinery of social control. "We have always had to be concerned with production," explained Secretary Wallace in one of his radio talks in which he discussed the work of the Department--and in particular its relation to the present situation. "Whatever else man can do without, he cannot live without food. And that was no simple problem back in the days when men lived in tribes in the forests, and when the food supply depended upon a man's skill with crude weapons. When the first faint stirrings of commerce and industry drew men in larger groups, in cities, the problem of a food supply became even more acute. Those who lived in the ancient cities could not grow their own food and fiber. Those who remained on the farm had the new job of growing not only for themselves, but for other families in nearby cities. Thus the dependence of the city dweller upon the farmer is overwhelmingly real. It is the key-log in the structure we call modern civilization.

"And there were times when the structure was in danger of collapse, or indeed did collapse, because the key-log weakened and gave way. By reason of abnormal seasons, drought or flood, famines came and wrecked whole segments of human society. It was customary to blame those catastrophes on nature. Man, weak creature, was powerless if nature chose to starve him, or drown him, or otherwise maltreat him. Somewhere back in the ages, however, a few individuals, more daring, more imaginative than the rest, began to wonder whether that was true. They reasoned that though nature could not be ignored, it could be modified. Man began

doing that when he learned how to make fire by rubbing sticks together. We have been modifying the behavior of nature ever since, to prevent famine, flood and other disasters, until, as Julian Huxley puts it, man has done more in five thousand years to alter the biological aspect of the planet than nature has done in five million years.

"By putting nature in harness, so far as possible, we have solved mankind's first great problem--the problem of producing enough food to go round. We have solved it too well....When it is possible for the farmers of a nation to increase production 50 percent while crop acreage is increasing only 25 percent, we know that science has been at work. That is exactly what has happened in the United States during the past 30 years. In large part it is a result of the scientific work of the United States Department of Agriculture and the cooperating State institutions. It was for the purpose of putting science to work in agriculture that this Federal Department of Agriculture was established by Act of Congress 71 years ago. Washington, Jefferson, and Franklin saw the need for it even back in their day. The department was created primarily for scientific research, its main job always has been research, and I hope research will always remain a principal duty."

Of course it is not enough to discover facts; a public institution has also the obligation to see that the facts are made available to all who can profit by them. When a plant breeder in the department develops a variety the job of the department has not ended with that discovery. The new variety has to be tried out in various regions, in the field. Next, the results of those trials have to be made known to growers. That involves publications, both technical and popular, and articles for the press, and radio broadcasting. Then the seed of the new variety has to be made available to farmers. The county extension agent may step into the picture at this point, and suggest that the interested grower sow some of the new seed in a test plot, alongside some of the seed he and his neighbors have been using in the past. And when the old and the new varieties are up and are harvested, let the neighbors for miles around come in and compare them and decide whether or not the new variety is better than the old, and worth investing in. That is a thumbnail sketch of the way science is applied to agriculture in this country. "Whether he knows it or not, every farmer in the United States is farming differently today--and better--because of the scientific discoveries resulting from State and Federal appropriations. The average hour of man labor and the average acre of land is undoubtedly twenty to thirty percent more productive today because of this scientific work.

"About a hundred years ago in England, Michael Faraday was what we might call an experimental philosopher. He never concerned himself with the invention of machines. His sole aim was to learn something about the workings of nature. He discovered the principle of electromagnetic induction, and if you remember your high school science, you will recall

that without that discovery we would today have no means of putting electrical energy to work for us. Without Faraday, the amazing inventions of Edison and Marconi would not have been possible, and your radio and electric lights would not exist.

"And Mendel, that cloistered Moravian monk who whiled away the hours studying plants, and experimenting with the cross-breeding of varieties of garden peas--of what earthly use was all that? He did it because it interested him. But was it of any use to the rest of us? I can assure you that it was, for the principles he discovered have been employed by the plant breeders of today in developing more productive varieties of every plant that feeds and clothes you. Scientists like Mendel and Faraday were working what we call pure science. They were trying to discover nature's fundamental secrets, but without thought of any practical application of their discoveries. Had some overzealous administrator tried to restrict their curiosity to some specific object, or the immediate solution of some highly practical problem, we would have been deprived, in all probability, of their great discoveries.

"It falls upon another group of scientists to apply these basic principles to the pressing problems of the world, and turn them to practical account. Thus most of the scientific research in government departments is applied science. The surprising thing, however, is that even in the field of applied science far-reaching discoveries are made, often as a by-product of the immediate task...a scientist may fail to solve one problem, only to solve another unexpectedly.....

"Much of the scientific work of the department, however, calls for more than the ordinary equipment of a scientist. I am thinking of the plant explorers, the men who cut their way through treacherous jungles, or press on across the forbidding deserts of Mongolia in search of plants that we need here at home. Whenever you eat bread made from durum wheat, or enjoy a choice steak or pork chops from cattle or hogs fed on alfalfa and soybeans, or sample a package of dates or a crate of navel oranges from California, or the Satsuma oranges of the Gulf Coast region--whenever you enjoy any of these things, you are reaping the benefit of the work done by Department of Agriculture explorers."

The Secretary then discussed some of the results of the research activities of the department, with very generous reference to the work of this Division, pointing out that these results emphasized the fact that research can and does stabilize crop production, and helps to eliminate or reduce those hazards -- of disease, of climate, even of soil -- which make agricultural production uncertain. "For it remains true that though drouth or disease or insect pests may raise the price of a crop by reducing the supply," he said, "such higher prices are cold comfort to the particular farmer whose cotton has been destroyed by the boll weevil, or whose wheat has been hit by rust."

In spite of the part it has played in bringing about undesirable surpluses, the Secretary expressed his conviction that our expenditures for science, our efforts at increasing productive efficiency, have in no sense been unwise. "Certainly no thoughtful person could approve the abandonment of scientific research, or the relegation of our machines to the ash-heap," he said. "To do that would be like abandoning the use of automobiles because we have automobile accidents. As a rule, the fault is not with the automobile, but with the driver. So, it is not the fault of science that we have unused piles of wheat on Nebraska farms, and tragic breadlines in New York City at one and the same time. Rather it is because we have refused to apply science to the development of social machinery, machinery that will regulate our economic system to the end that what we produce can be equitably divided...Can we, do you suppose, become as efficient in our social experimenting as we have already proven ourselves in scientific experimenting? If this can be done, we can go ahead into one triumph after another in the scientific world....

"I am not one to ask for less efficiency. I want more and I know we can get far more. But I want the efficiency to be controlled in such a way that it does more good than harm. I want to see the farmers of the South grow 300 pounds of cotton per acre instead of 150 pounds, and the farmers of the North 50 bushels of corn per acre instead of 35 bushels. I want to see the average milk cow yield 400 pounds of butterfat per year instead of 200. And I see no reason why our hogs eventually should not produce 100 pounds of pork on the average from 6 bushels of corn, instead of from 9 bushels. These things can be done. The research now going on will make it possible, and will pave the way for countless new agricultural achievements as well.

"The research job, far from being done, is only well begun. We shall need new varieties to resist diseases better than those we now have. We shall have to keep cutting costs of production by increasing yields per acre. Methods of cultivation, like methods of feeding and managing livestock, must be subject to continuing investigation if we are to keep abreast of the continually changing economic world about us.

"No, the job of scientific research in agriculture is not over, nor will it ever be. But today we have a new job, a new field of experimenting--that of social control. Research to increase productive efficiency, to widen markets, must continue. Eliminate the less important research activities, in deference to the need for economy; get rid of the dead wood in our scientific organizations--but keep the men of science at the task which will always need doing. And add to the old job, the one that has begun so well, this new job of developing the machinery of social control...."

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

C. W. Mann, Pomona, Calif.

The refrigeration tests carried on recently at the railroad precooling plants at Colton and San Bernardino present an interesting comparison of two systems of precooling adapted to the handling of orange shipments," he comments in his report of August 5. "The usual method of precooling the fruit after loading in 'dry' cars involves a delay of from 12 to 24 hours before the shipments are placed under refrigeration. An experimental method in which the cars were preiced several hours before loading was compared with the ordinary precooling of the fruit in uniced cars. The effect of the preicing method was to give a greater reduction of the temperature of the fruit at the completion of the precooling operation in fruit of the preiced cars.

"The preicing of shipments in connection with precooling as applied at railroad plants was first tested experimentally in the summer of 1932, and the method has been used on a large number of cars this season. The work has also shown the possibility of improvement of the precooling equipment in use by the railroads. The preicing-precooling method is of particular interest to the refrigerator car lines, as they furnish all the ice used for such shipments which may take the place of shipments now forwarded in cars iced by the shippers themselves.

"Mr. Cooper accompanied the last test on the Santa Fe railroad to Needles, Calif. He reported temperatures on the way of 126° F. in the shade!

"As an evidence of marketing difficulties, the record of recent shipments of Valencia oranges shows that it has been possible to dispose of about 850 cars of oranges per week in the markets since the opening of the season at slightly lower prices than were received for 1,050 cars per week sent out during the same period last year. A similar situation seems to have affected shipments of cantaloupes from Imperial Valley, which are thought to compete in the market with oranges. Cantaloupes show a decline from about 21,000 cars in 1931 and 13,000 cars in 1932, to 9,300 cars in 1933."

H. C. Diehl, Seattle, Wash.

Writing on July 31, he says: "The raspberry harvest is in thepeak now, the quality is quite good, but the crop is short as anticipated... Our week was filled with discussions of ways and means to salvage for the grower the fresh pea crop which is a total loss otherwise due to market collapse. Since the Telephone type of peas are ideally adapted for frozen pack, the processing of a considerable portion of this crop is contemplated if emergency government finances can be obtained. The prices and market for processed peas, heat or frozen, promises to be good this winter due to apparent pack shortage nationally, hence the saving of the pea crop in the Northwestern regions is no mean part of the agricultural recovery program in this section."

FRUIT AND NUT PRODUCTION

A. D. Shamel, Riverside, Calif.

"We visited on last Wednesday the late maturing Santa Rosa limb sport in the Yucaipa district, obtaining photographs of the parent tree, progeny trees, and samples of fruit from both the normal and spot branches of the parent tree," he writes on July 17. "Mr. Harlan, the owner of the orchard, is very enthusiastic about the commercial possibilities of the sport and we will follow its performance with keen interest. The fruits of the sport will not be ripe until about September 1, while the normal plums are being picked now."

"The early maturing Washington Navel sport at Alvord continues to show its comparative superior since notwithstanding the fact that it blossomed at about the same time as the normal trees. The progency trees of this sport are loaded with a very heavy crop and will have to be propped, while the comparative normal trees have only a light crop. I think that there is a tendency of the early Navels to a comparatively large navel opening, but Mr. Moore says that this condition is not as marked now as when the progeny trees were first fruiting. He agreed with my observation but feels that this characteristic is not sufficiently marked as to be a serious, if any, defect from the commercial point of view. Further experience will determine the facts and I am hopeful that this strain will prove to be of value in certain early Navel orange districts."

Milo N. Wood, Sacramento, Calif.

Writing on July 15, he says that the walnut pollination experiments in the Linden District are very marked so far as a comparison of the set in the pollination portion with that in the checks. "The blight, however, is exceedingly bad even in the sprayed orchards and it is estimated that from 75 to 80 percent of the buts are badly infected", he adds, "and some of these have already dropped. Although the results from the pollination in this particular district are very marked, our experiments will be at a disadvantage on account of the blight infestations, and it will be necessary to conduct extensive counts as well as to keep weights."

C. E. Schuster, Corvallis, Ore.

"Winter killing in the walnut orchards is becoming more noticeable all the time," says the report of July 22. "Probably it will be found that more trees have been killed this last winter than have died in the bearing walnut orchards of today during the last fifteen or twenty years. At least this would seem to be the record as deduced from our cost of production survey.....The filbert crop looks good. The early estimates of the growers are being rapidly increased."

FRUIT AND NUT PRODUCTION

George F. Waldo, Corvallis, Ore.

"The raspberry crop is probably about normal this year in spite of some winter damage in some localities," comments his report for the week of July 17-22. "Prices have been fairly favorable, ranging from 6-1/2 to 5 cents per pound. No red raspberries were shipped fresh this year, most of the crop being canned, although a considerable amount was also frozen.

"On Friday and Saturday a visit was made to the Western Washington Experiment Station at Puyallup, Wash. where there is considerable breeding work going on with raspberries. The Lloyd George-Cuthbert cresses seem very promising. They are attempting to overcome the winter injury troubles in the Cuthbert raspberry by crossing Lloyd George and Cuthbert, the Lloyd George being more hardy than the Cuthbert and not quite so vigorous a grower. Some of the seedlings seem to approach the Cuthbert invigor, however.

"On Saturday, a visit was also made to Mr. Eberhardt's blueberry nursery at Olympia, Wash. He claims to have about 100,000 blueberry crosses, most of which are with the varieties developed in New Jersey. However, he is using some of the native wild species extensively."

W. W. Aldrich, Medford, Ore.

Report of July 31: "Most of the past week was devoted to measuring fruit or calculating fruit volumes from the fruit circumference data. Each Monday and Thursday morning 2,040 fruits are measured by three men in three and one-half hours. The third man, who records the measurements, also checks the increase of circumference of each fruit and thus immediately corrects errors from measuring wrong fruits or from incorrect reading of tape. In addition, 180 fruits at the Burch plots are measured three times each week. At present the soil moisture in the dry plot (wilting percentage about 5 percent) is 3 to 5 percent above the wilting percentage. Thus far fruit growth rates in "wet" and "dry" plots have been identical, but a check in fruit growth in "dry" plot is expected this coming week, when the soil moisture in the upper two feet reaches the wilting percentage.

He had written on July 24 that he has seen at Mosier sweet cherries suffering seriously from "little leaf," which showed apparently complete recovery from trunk injections of zinc sulphate. "By injecting on only one side of the trunk, the untreated side served as a check. The continuation of serious "little leaf" symptoms on the untreated side strongly indicates little if any cross transfer of the zinc sulphate cure (whatever it is)."

FRUIT AND NUT PRODUCTION

W. W. Aldrich (continued)

The July 24th report also states: "Upon my return to Medford, I was again embarrassed by questions in regard to thinning. In my weekly afternoon devoted to observations around the Valley, I always encounter such questions. Pear growers want to avoid small Winter Nelis this season, and are thinning thoroughly. Some are thinning to leave as many as 75 to 80 leaves per fruit. My cooperative plots with Professor Reimer will undoubtedly give me an accurate check on the results from Nelis thinning."

C. P. Harley, Wenatchee, Wash.

"Second brood codling moths are flying and growers are very much at a loss to decide which type of second cover spray should be applied," he writes July 31. "There seems to be a 'bug' in any materials that will give adequate control. Lead arsenate, of course, still appears to be the most effective spray but the possibility of inability to reduce residue loads makes it rather risky to apply this material further. Nicotine and oil seems to be the favored dose but even here the coating of oil on top of the first brood lead may result in some difficult removal. Cryolite with fish oil or mineral oil is now considered a very effective spray, in fact probably fully as efficient as lead arsenate. Here again, the oil may complicate the removal of lead and in addition introduce a third poison which must be removed. The limited experience of other years is hardly sufficient to warrant removal with our present solvents. Manganese-arsenate will probably be used rather extensively since it contains no lead and its removal is satisfactory, although the control is probably not as good as with the former substances.

Geo. P. Hoffmann, Meridian, Miss.

"Pecan growers, formerly expressing themselves as feeling that the crop was too heavy for the trees to withstand and mature, are now complaining of fruit shedding," he comments in his report for the week ending July 29. "The nuts remaining on the trees are making rapid and satisfactory growth."

"The recent rains have greatly damaged and lowered the quality of peaches, figs, melons and tomatoes. Vegetables, generally, are plentiful. Potato prices, locally, have increased during the past two weeks from two to seven cents per pound. The popular variety being offered is the Red Bliss. Early sweet potatoes of the Porto Rico variety are being offered in the local markets in limited quantities."

"Throughout the week covered by this report we had almost unceasing rains, with the result that we were not able to do much outside work."

FRUIT AND NUT PRODUCTION

B. G. Sitton and J. L. Pelham, Shreveport and Robson, La. August 5.

"Report received from Toledo, Tex. is to the effect that the heavy rains of the period of July 22-26 have put the Sabine river in flood stage and that the irrigated plots are under water darying in depth from 18 inches to 3 feet or more. This probably spoils that experiment for this season and may mean that it will have to be abandoned. Rainfall at Toledo for the period July 22 to 29 totaled 8.97 inches. (For the same period at Shreveport the total was 20.43).

"On the station at Robson the trees which had become loosened during the recent rains have been strengthened and tamped. All of the trees have been sprayed with zinc sulphate. Since the rains the trees have started new growth and we thought that spraying would be beneficial. The trees have made a good growth this year, and apparently should produce some nuts next season.

They had written July 29 that the rainfall at Robson for Sunday and Monday reached 18.96 inches, putting about 90 percent of the station under water, varying from six inches near the house to three feet midway of the field." As soon as the water in the bayou permitted, the water drained away from the place completely, indicating that the surface drainage we have provided was sufficient to carry off the water."

DISEASES OF TRUCK CROPS

Doctor Zaumeyer writes from Greeley, Colo. on July 22 that the prospects of a bumper crop of beans, provided normal moisture falls, are encouraging farmers of Eastern Colorado who have hopes of their best year since 1930, when Pinto beans brought $4.00 per hundred. "Beans are again at this mark," he writes, "and with the warehouses nearly empty, a splendid prospect of a price nearly that good appears when the present crop is sold. The weather, of course, will decide the size of the crop. In northern Colorado where practically all of the beans are grown under irrigation, the prospects are likewise excellent."

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Phony Peach. Dr. Lee M. Hutchins is the author of a beautifully illustrated publication (No. 78) issued from the Office of the State Entomologist, Atlanta, Ga. on "Identification and Control of the Phony Disease of the Peach." Unfortunately, only one copy was issued--at least that is all we have been able to find--and that in the hands of a rival editor. Something should be done about this.

The bulletin described how the term "phony peach" developed from "pony" as originally applied to trees dwarfed by this disease, some highbrow later substituting "phoney" for "pony." The official name is merely the dictionary spelling of this later modification--"phony disease."

It looks like a "horse" on somebody!

FRUIT DISEASES

J. B. Demaree, Albany, Ga.

"Pecan nuts generally are undersize; this is especially noticeable in the Cairo-Thomasville-Monticello districts and in some orchards west of Albany," he writes July 29. "Rains began to fall south and east of Albany earlier this summer than west of town. The earlier rains are reflected in greater size of nuts. The first evidence of nut maturity was observed this week as indicated by the hardening of the tip end of the shell of nuts of the variety Moore at Monticello, Fla. The cotyledons are also enlarging and absorbing the packing material within the shell cavity.

"This has been a comparatively favorable season for controlling scab and other fungous diseases on the pecan in the Albany district. Experimental plots and commercially sprayed orchards where any degree of regularity of spraying was observed are now quite free of scab. downy spot is perhaps more prevalent than any other disease. Brown leaf-spot is scarce and, so far, blotch has not been observed."

On July 22, he wrote of a trip to Thomasville and Cairo, Ga. and Monticello, Fla. "....The main object of the trip was to advise Mr. Simpson about spraying for pecan scab. In spite of a very heavy early leaf and nut infection which occurred in April, with timely applications of spray the disease has been held in check remarkably well. Four applications have been made and a fifth will be put on during the first week in August if conditions then seem to warrant it.

"The most interesting thing seen at Monticello was a small zinc-sulphate-treated plot in the Mahan pecan nursery. The zinc salt was applied to the soil during July of last year. The treated trees in that plot made very little, if any, response last year, but now the plot can easily be singled out from a distance. The treated trees are larger, the foliage is greener, and they have much less rosette than non-treated trees."

Howard E. Parson, Spring Hill, Ala.

Writing on July 15, he says: "Notes were taken on our rosette experiment at Biloxi. Success trees have benefitted from applications of 10 and 20 pounds of zinc sulphate used as a fertilizer and from a spray of 1/4 percent solution of zinc sulphate. Two pounds of zinc sulphate used as a fertilizer and zinc Bordeaux spray has not made an appreciable difference in the trees."

FRUIT DISEASES

H. F. Bergman, East Wareham, Mass.

"Most of the time this week we have been running some experiments on the rate of water loss in cranberry vines in advanced stages of false blossom as compared with that in healthy plants," he writes July 22.

"We have often observed that diseased vines are killed by very dry or cold weather whereas the healthy vines withstand these conditions with little or no apparent injury. As there was the possibility that this difference might be related to a difference in the rate of transpiration we have made some experiments to determine if such a difference could be detected. In some instances our experimental data showed a clear difference in the rate of transpiration, the normal plants losing water about half as fast as those with false blossom. In other trials the differences are not so clearly defined, due to irregularities in the behavior of individual plants for which no explanation has been found.

"As you know, the control of false blossom depends upon the control of the leaf hopper. Pyrethrum has been considered as the most effective material for use in controlling the hopper and since last year there has been a very strong tendency to apply the pyrethrum as dust rather than as a spray. Very lately it has been found that in some instances even a 20 percent dust really gave no control, as there were practically as many leaf hoppers within four or five days after dusting as there had been before. Previously the counts for determining the effectiveness of the dust had been made one or two days after the dust was applied at which time no hoppers were to be found. With this condition to contend with, dusting may not be received with as much favor as it has heretofore, and other methods may perhaps be used by many growers.

"The blossoming period is nearing the end and a heavy set of nearly all bogs including many dry bogs which have not borne a crop for many years, indicates an unusually large crop of berries this fall."

J. R. Cole, Shreveport, La.

"Scab is extremely severe on Schley and Van Deman and I am expecting a loss even though four applications of Bordeaux mixture have been applied," he reports August 5. "There is about 75 percent infection of scab on the nuts of the Schley and 90 percent on the Van Deman. However, a large percentage of the spots are small and may not do any damage. On the checks of both varieties the nuts are infested with the scab fungus to the extent of 100 percent, and they are turning black and dropping....There is a very good crop of nuts on most varieties, but growers who are not spraying for scab will not mature many nuts from the scab susceptible varieties. The Stuart and Tesche varieties should mature their crop of nuts, especially where they have been sprayed for foliage diseases."

FRUIT DISEASES

M. A. Smith, Ozark Fruit Disease Laboratory.

Writing on July 29, he reports that "grapes are beginning to move from the Republic district. Several car loads of Moore's Early were shipped this week. The peak of the shipments will probably be reached by August 10."

On July 22 he wrote: "The long dry period which we had in June was very favorable to codling moth development. As a result many apples have dropped within the past 30 days. A recent count of these dropped apples showed that 98 percent were infested with codling moth.

"Mr. Carl Vollenweider, who owns a large apple orchard north of Seymour, is installing an irrigation system. He will obtain his water supply from the James river, which flows through his farm. As far as we have been able to learn, this is the first large scale orchard irrigation system to be installed in this region."

Paul W. Miller, Corvallis, Ore.

"In tests carried on in a grafted Franquette walnut planting near Scholls, striking control of walnut bacteriosis was obtained by two applications (one pre-bloom and one post-bloom treatment) of Bordeaux mixture 3-3-50 as is indicated by the fact that only 3 1/2 percent of the nuts examined in the sprayed block contained blight infections, whereas in the untreated plot about 54 percent of the nuts were found infected," he writes July 29. "In this particular test the applications were exceedingly well timed, the treatments being made just prior to two of the most important infection periods of the season. It would appear from the results of this test that even in bad blight years properly timed applications of Bordeaux mixture can be expected to reduce the number of blight infections to a negligible quantity.

"In dusting tests carried on in a grafted Franquette orchard near Dundee, Ore., the use of four dust treatments (two pre-bloom and two post-bloom applications) reduced the number of infections from about 55 percent in the untreated portion of the planting to approximately 25 percent in the dusted section. However, the degree of control does not appear to be anywhere near as good as was obtained with two properly timed Bordeaux treatments as has been pointed out above.

"During the week, 1,000 tagged Franquette nuts were examined twice for new blight infections. No new infections were found. It appears from the results of these studies that the blight development for this season is practically over."

ADMINISTRATIVE NOTES

Reports Needed. Our project leaders have been informed of a recent memorandum from the Assistant Secretary to Doctor Taylor, telling him that the Recovery Council is scheduled to meet once a week throughout the summer. At each meeting a report will be made of the activities of the various agencies of the Department which have a bearing on national policy.

The Assistant Secretary added that in order to aid in the preparation of this report it would be necessary for the chiefs of bureaus and offices to submit to the Secretary each Friday a memorandum of the activities of their bureaus, particular stress being laid on items of general interest rather than on those of purely departmental interest.

In order that Doctor Auchter may have material for sending to Doctor Taylor in connection with this weekly report, our project leaders have been adked to send him at least once a month an item of not more than two-thirds of a typewritten page, double space (about 250 words) giving a report on some of their work which would have general interest.

Our workers in general should lend their aid to their project leaders in this matter by writing up such items in popular style so that we may have something to send in each week, bringing before the public at regular intervals some of the important work which we are doing. There would not be space, nor would it be desirable, of course, to attempt to give detailed experimental results. What is needed is a brief statement or summary covering work which you feel would be of interest to a large public consisting mainly of people who know very little about the technical details of the subject you discuss.

Field Workers to be Paid Semi-Monthly. We are pleased to be able to announce that by a rearrangement of check writing work and the use of recently developed mechanical appliances in the Department Disbursing Office, we are going to be able to pay field workers semi-monthly, beginning September 1. Of course, this means that checks will be received about the 10th and 25th of each month, say, but once the plan is in working order you will know that the checks will come along regularly. Under this new arrangements we will not be allowed to pay for telegraphic notices, and certifications to the effect that the employee has been at work should be mailed after the close of business on the 15th and 30th of each month.

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THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.

John A. Ferrall, Editor

This NEWS LETTER is for distribution only to employees of the Division, and the material contained in it is of an informal and confidential nature and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and are not necessarily the official or final word on the subjects.

Vol. V Washington, D. C., September 1, 1933 No. 17

A Gift to the Stockholders! We are declaring an extra dividend! Coming at a time when commercial organizations are showing distress because of the Supreme Court's ruling that when a Government employee does research, even as part of his regular employment, and it results in a patentable invention, he may personally exploit the results for private profit, it is gratifying to announce the Division's latest dividend to its stockholders--Patent No. 1,920,540, just issued to J. R. Winston, R. C. Wright and J. F. Wootten, of our Division, and dedicated to the free use of the public.

This patent covers improved methods for coloring citrus fruits, in particular the "trickle" method upon the perfection of which Mr. Winston has been engaged for the past several years. Studies along collateral lines by Messrs. Wright and Wootten contributed to the development of the method and this has been recognized in the joint patent. The "trickle" method gives a richer and more uniform color in a shorter length of time than the old methods, and in addition not only prevents the 8 percent or so shrinkage in weight under those methods, but cuts down the loss from decay, which has often been very serious with the old methods.

The new method is in almost universal use in Florida already, and it was estimated last year that nearly $3,000,000.00 was saved to growers in the handling of some 20,000 carloads of citrus fruits.

FRUIT DISEASES

H. F. Bergman, East Wareham, Mass.

Writing from the Cranberry Disease Laboratory on August 12, he says: "Most of the time this week I have been looking over blueberry fields for Alternaria (?) disease and crown gall. There are now three fields in which both these diseases are very common. In one the bushes are so badly infected that no crop was picked this year, whereas it should have produced from $500.00 to $1,000.00 worth of berries. In two other plantings both diseases are present extensively, but have not reached the condition of the first although they probably will do so soon unless something is done to prevent it. Miss Wilcox has made cultures of material from all the blueberry fields visited."

John C. Dunegan, Fayetteville, Ark.

"Harvesting of the Maiden Blush apple crop was completed at Bentonville toward the middle of last week," he reports August 12. "Prices were rather low and one grower stated that 40 cents a bushel for orchard run was the prevailing figure. Graded and packed Maiden Blush brought between 55 and 60 cents a bushel, and a few were sold in Kansas City to net local growers 62 cents a bushel. The Ada Red harvest is about finished and they sold around 60 cents a bushel. The quality of the crop of this variety at Bentonville was generally poor, with much wormy fruit.

"The Jonathan harvest will be started in about two weeks. A few growers hope to begin picking on the 21st. This variety has made fair size this year but so far most of the fruit is lacking in color....Grapes have been moving from Fayetteville in carload lots every day this week."

STRAWBERRY DISEASES

The revised edition of Farmers' Bulletin No. 1458, "Strawberry Diseases," is now available for distribution. This publication, prepared by our late* and valued associate, Dr. Neil E. Stevens, is meeting with a splendid reception. It is rather gratifying to believe that a lot of the increased interest is due to the extension of strawberry growing through the help of some of our promising new creations. Strawberries, of course, are more widely grown in the United States than any other small fruit. Not only are they particularly adapted to the home fruit garden, and found in such gardens in every State, but the centers of commercial production are located in many widely different regions of the country, distributing fresh fruit over more than six months of the year.

* Not dead; merely departed from mirth!

FRUIT DISEASES

Leslie Pierce, Vincennes, Ind.

"The harvest of the Elberta and Hale crop in the Purdue-Vincennes orchard was commenced the middle of the week," says the report of August 12. "No. 1 Elberta sold for $1.80 to $2.00 per bushel at the packing shed. A small lot of No. 1 Hale shipped by truck sold in Chicago at $3.25. Truck shipments of Early Elberta, Champion and Belle of Georgia sold in Chicago at from $2.00 to $2.40. One lot of 20 bushels of extra fancy Hale sold at the packing shed at $4.00 per bushel.

"Practically no loss from brown-rot has occurred in the P-V orchard up to this time. Temperature and moisture conditions have been favorable for the development of brown-rot for the past four days, so it is possible we may suffer considerable loss on our check fruit before the end of the season."

DISEASES OF TRUCK CROPS

Wm. D. Moore, Charleston, S. C.

"We have had rain almost daily in this section for the last two weeks, accumulating during the period a total of 4.15 inches," he reports for the week ending August 19.

"This brings our total for the year considerably above the average but, so far, we have seen no ill effects from it. Temperatures have ranged somewhat above normal, affecting in some instances the germination of early planted cabbage seed. As a whole, however, the general farm situation in this area is very good with considerable activity at this time in land preparation and general planting.

"The fall crop of cabbage will probably be somewhat larger than last year and it seems that an added acreage of beans will also be planted.

"With farm financing more difficult than usual, we have noted a more active movement on the part of most farmers in getting the latest information on all phases of vegetable crop research. We are constantly answering questions on seed sources, varieties, disease control, and insect pest conditions. In striking contrast to the sentiment of five years ago, most growers say now that they cannot go on without the aid of our information."

(Editorial Note.--I'm sorry we can't print that fourth paragraph in red ink! JAF)

FRUIT AND NUT PRODUCTION

J. R. Furr, Pomona, Calif.

"The set of fruit on the lemon plots at the Maechtlen ranch has been very light during spring and early summer," he writes July 29. "Our counts of flowers, pre-set fruit, set-fruit and leaves on the trees in these plots show a decrease in the number of set-fruits per 100 leaves from April through July. In a normal season the number of set fruits should increase rapidly from May to July. This decrease is in large part due to the light bloom and poor set up to the present, but to some extent to an increase in number of leaves, and by harvesting of fruits which have attained ring size.

"The lemon plots at the Warren ranch have shown almost no bloom since the first heavy bloom in April. Practically none of the bloom up to the present time has set fruit. These trees were badly defoliated during the fall and winter of 1932. Very little shoot growth occurred on these trees until June, and elongation of the new growth was not completed until about the middle of July. Probably because of the defoliation a large part of the large green fruit on these trees dropped during June and July. The yields from these trees will be quite low for at least nine or ten months.

"The loss from defoliation of lemon trees has been quite heavy in all areas affected by the severe winds in the fall and winter of 1932. During the fall conditions were favorable for a heavy set of fruit, and many groves in the Pomona Valley are carrying an unusually heavy crop of green fruit which will be harvested during the summer months. The fact that the trees are carrying heavy crops of fall-set fruit probably accounts in part at least for the poor set of fruit this spring and for the slow recovery of wind-injured trees.

"The lemon plot at the Maechtlen grove which was stressed during June and early July is now showing a fair bloom. These trees are carrying a very heavy crop of green fruit set last fall following a stress in August.

"The plot which was stressed last July and again this July carried the fruit which was set late in the fall through the 1933 July stress in good shape, but the larger green fruits set immediately following the 1932 July stress stopped growth early in the 1933 stress period and are now mostly under ring size, but are light green in color, the peel is thin, the flesh yellow--in a word, the fruits show all the signs of old age! It looks as if it will not be possible to stress trees year after year in July.

FRUIT AND NUT PRODUCTION

J. R. Furr (continued)

"We have been trying to find out how much of the sudden increase in fruit volume immediately following irrigation can be attributed to swelling--that is, to an increase in the percentage of water in the fruit. This work is not completed, but apparently the intake of water is slow. The fruits and leaves showed about the same moisture content at 2:30 p.m. the day before irrigation as at the same hour the day of irrigation. Water was applied at 4:30 a.m. The moisture content was greater in fruit and leaves at 4:30 a.m. the day of irrigation than at 2:30 p.m. on the same day.

"Measurements of ruits taken on the same plot indicate that some shrinkage of the fruits occurs the forenoon of the day water is applied, even though these trees are under such severe stress that the leaves have begun to curl. However, shrinkage was much greater on non-irrigated trees which were under less severe stress. The greatest swelling occurred during the night following irrigation. The volume increase due to swelling, as indicated by measurements of fruit, seems to have been completed by the second morning after irrigation.

"We have found that there is sufficient variation in size of fruit due to shrinkage or swelling as evaporation opportunity varies to introduce appreciable error in measurements when g rowth rate is low even though measurements are made at about the same time of day. To avoid this trouble we are making the measurements between 5:00 and 8:00 a.m. during the hot season."

Milo N. Wood, Sacramento, Calif.

"In the breeding plots at Davis, dataon each of the hybrid trees has been secured. The nursery has been gone over and the trees resulting from the crosses are for the most part growing very well," he reports July 29.

--"Approximately 365 trees of each of two promising varieties will be ready for distribution this year. It is planned to scatter these widely throughout the State in order to determine their suitability to different districts and to various climatic conditions occurring in the almond growing regions. The nursery trees of these two new creations are very thrifty and attractive in appearance and retain the vigor and desirable qualities of the parent trees, although no particular attempt was made to select root stock on which to graft them."

FRUIT AND NUT PRODUCTION

C. F. Kinman, Sacramento, Calif.

"The apricot harvest has been a long and tedious affair," he wrote on August 7. "There has been more uneveness in time of fruit ripening among the trees than in any former year that I have kept the yield records, and in some of the fertilized plots the fruit ripened decidedly late. The harvest was finished August 3, which is two to three weeks later than normal."

W. W. Aldrich, Medford, Oregon

"Both during 1932 and during this season, I have observed fluctuations in rate of fruit growth not explained by soil moisture," he writes on August 14. "I believe most of these variations are the result of evaporating power of the air. After preliminary study during July, closer study was begun August 1. Each morning at 7 a.m. (while stomata are open and air is cool) 180 fruits are measured. The time of closing of stomata are determined for 4 to 5 days per week, and the evaporating of the air is measured by atmometers, and by a standard size of evaporating pan (by Mr. Work).

Since distilled water was not available, mountain snow water from the city water system was used for atmometers. Apparently this water contains some substance that clogs the pores of the clay spheres, for the daily water loss per black sphere has decreased from 95 cc for temperatures of 100° to 45 cc. However, the evidence to date shows very clearly that two days after very hot weather the fruit growth rate decreases from 60 to 70 percent, and then two days after cool weather (maxima below 90°) fruit growth rate increases again."

On August 5, he had reported: "Rather close study of stomata during the past week failed to show any difference in rate or time of closing of stomata on 'heavily' and 'lightly' pruned trees.

"The fruit growth on the trees with different leaf-fruit ratios is showing the same relation pointed out by Doctors Magness and Haller, to wit, that when the leaf-fruit ratio is increased appreciably, the rate of fruit growth is not increased proportionately. I had suspected that this might be explained by an earlier closing of the stomatafor trees with the higher leaf-fruit ratios; but several examinations have shown no consistent differences in time of stomatd closing."

He reports that he is taking fruit samples to determine if possible whether water is withdrawn from fruits to any extent during the day.

FRUIT AND NUT PRODUCTION

C. L. Smith, Austin, Texas. (Texas Pecans)

"A trip was made to the Brownwood station during the week," says the report of August 5. "There has been no rain since the latter part of May and it is very dry. The trees on the station have been watered and are being watered again. They apparently show no ill effects from the drouth except that they are not making quite as much growth as was expected. The trees which had shown symptoms of rosette early in the season and which were sprayed with zinc sulphate have practically recovered and show no signs of rosette on new growth.

"The results of the application of zinc sulphate for rosette control in the Lucas grove were checked up. In every instance where the trees were sprayed there is improvement in the rosette condition. Also in every case where the zinc salt was injected into the tree trunks there is decided improvement.

"Where the zinc was applied to the soil there is only slight improvement, probably because the soil is highly alkaline. At May, Texas, and on sandy soil, the application of the zinc salt to the soil has given good improvement in the rosette condition of old trees.

"Results in other localities are very similar. Several orchards of 25 to 200 acres have been sprayed with zinc sulphate as a result of experimental work of the Shreveport Station and our station in Texas.

"The trip to Brownwood was extended to San Angelo, where observations were made on young orchard trees, many of which were affected with rosette. Arrangements were made for spraying these orchards with zinc sulphate. Some trees, especially in the nursery of Mr. Rainey, have already been sprayed, but the spraying was done the latter part of July and has had hardly time to show results.

"Nut samples were taken at Austin and preserved for analysis. Analysis of root and shoot samples was resumed with the return of Doctor Thor from a month's vacation.

"The nut crop around Austin will probably be as heavy as in 1931, although there is a lot of stink bug injury showing up lately. From all reports we have had, it seems that the State as a whole will produce about one-half as many pecans as it produced in 1931."

On July 29, he wrote that an experiment as a test for a new budding method in topworking was set up in the grove of Jack Shelton at Gonzales. "Good rains have fallen in some sections, but it is still dry in many others. No dropping of nuts has been noted due to the drouth, however."

FRUIT AND NUT PRODUCTION

Elmer Snyder, Fresno, Calif.

"Temperatures during the week of July 24-29 reached the highest for the season," he writes on August 5. "July 27th the temperature reached 116° F. at the vineyard in the regulation thermograph housing. The average daily maximum for the week was 109.5° F. Considerable damage to the grape crop in commercial vineyards was reported. Many vineyards show the effects of leafhopper, lack of water, and the excessive heat, by the leaves turning brown and dropping, leaving the immature fruit exposed to the sun. Irrigation practised at the experiment vineyard on seedlings and younger plantings seemed to prevent any injury from the excessive temperatures. Land leveling operations have been in progress on the vacant land. Stock vines tied to stakes, and new plantings irrigated during the period."

On August 12 he wrote: "Approximately 300 grape seedlings, results of previous controlled crosses, are fruiting and ripening at the Fresno vineyard plot this season. Preliminary notes have been made to ascertain early coloring and early ripening seedlings. It has been interesting to note that practically all of the seedlings obtained from Muscat Hamburg have the Muscat flavor, while the seedlings obtained from Muscat of Alexandria have been lacking in Muscat flavor. Seedlings of the Zeante Currant varieties--Panariti, Corinthe blanc, and Corinthe rose--have all been larger than the Zante Currant male parent, but smaller than the female vinifera parent. The colors black and white predominate in the seedlings fruiting. Red colored seedlings have been few.

"A cover crop of Bravha cowpeas was sown during the week on a portion of the vacant land which will be planted to seedlings and new varieties next spring. A cover crop of Sesbania sown the early part of May, 1933, now has from six to twelve feet of growth. This crop is on a plot of land which is being prepared for future plantings. Sesbania, a relatively new cover crop for California, is being used in the orange groves in this valley for a summer cover crop and in the Imperial Valley it is used on land which has had lettuce. Reports indicate that lettuce can be grown several years longer on the same land if Sesbania is planted between crops after the lettuce is harvested, and disced under previous to the new planting of lettuce for the following year.

"Early ripening grape varieties were checked the week of July 30-August 5, and seedlings recorded for early coloring and ripening. The three varieties of "Zante currant" type grapes were sent for exhibit purposes at the Century of Progress Exposition--Panariti (black Corinthe), Corinthe blanc, and Corinthe rose."

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

C. O. Bratley, New York Market Pathology Report, August 4.

"During the last month four shipments of California oranges have arrived in New York by steamer under little or no refrigeration. The first two shipments were under ventilation only; for the last two, small refrigeration units for dehumidifying the air had been installed on the ships. This equipment lowered the humidity in the holds to around 85 percent and the temperature to around 75° F. The oranges in all shipments had received the regular Brogdex treatment. Most of them were shipped bulk in jumbo size lemon boxes. Some were packed in steel basket-like containers; but these did not stack well nor easily in the ship. The bulk fruit was lightered to a Jersey City warehouse where it was weighed into mesh bags for chain-store retailing.

"The fruit in all of the shipments was in surprisingly good condition. In an occasional box there were enough mouldy buttons to be noticeable and in the early shipments the fruits showed two or three percent of pitting around the stem. The decay was Green Mold Rot and was considerably under one percent. Despite the fact that the fruit looked well, the few packed boxes offered on the auction brought from 25 cents to 40 cents less than comparable fruit shipped under refrigeration. Oranges in the last boat shipment were not so discriminated against.

"Two boxes of oranges from each of two of the boat shipments have been held in the laboratory together with boxes of comparable fruit arriving under refrigeration. The observations so far indicate that the fruit from the ships is holding up as well, if not better than that from the refrigerated shipments.

"Three test cars of Arizona cantaloupes arrived last week as a part of a cooperative project with Mr. Wharton of the State Experiment Station at Tucson. The object of the test was primarily to determine whether riper melons can be shipped to the New York market and to determine more accurately what amount of refrigeration is best for cantaloupes picked at the full-slip and vine-ripe stages respectively. It was interesting to find that those picked vine-ripe arrived in excellent condition. Commercial shipments picked at this stage of maturity would undoubtedly require rapid handling on the market but it appears that, properly refrigerated en route, they could be placed in the hands of the consumer before they become overripe. The extent to which too green and consequently poorly flavored melons are placed on the market is undoubtedly much greater than is ordinarily realized.

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

C. O. Bratley (continued)

"In connection with the discussion of cantaloupes, it is of interest to note that in 1932 over 4,000 cars, together with over 3,000 cars of honey ball and honey dew melons, were received on the New York market. The importance of the melon receipts, which thus total over 7,000 cars (not including watermelons) is further brought out by comparing them with the 1932 receipts of apples, approximately 13,000 cars, and oranges, approximately 17,000 cars. It should be held in mind, of course, that most of the melon arrivals fall in a five-month period, while both apples and oranges are fairly well distributed throughout the year."

Edwin Smith, Wenatchee, Wash.

"Mr. Ryall was at the station July 31 and August 1 to arrange for the 1933-34 program of work," says his report of August 5. "The major activity at the Yakima station will be spray residue removal. With this we plan to continue biochemical and respiration studies with prunes and storage temperature with Jonathan apples and winter pears in conjunction with our program of work at Wenatchee. Dr. Gerhardt and Mr. Ezell have been making extensive laboratory preparations for the season's work. Enzymatic studies planned for winter pears during the current season are demanding considerable original research work in order to adopt standard methods to 'mass production' of determinations...We are 'casting about' to get ideas for setting up experiments for handling foam mechanically in fruit washing machines. The industry badly needs a cheap mechanical appliance which may be attached to present washing machines whereby foam may be kept down or returned to the tank as liquid.

"Growers received $40.00 per ton for apricots. The crop was light, but those having fruit realized more real money than they have for any fruit crop in a long time.....

"Growers generally have been greatly worried about controlling the codling moth. "How are we to clean the fruit if we use mineral oil with nicotine or cryolite?' 'What is the Department going to do about fluorine analyses if we use cryolite?' 'How much will fluorine analyses cost?' 'Will we face the cost of three analyses--one for lead, one for arsenic, and one for fluorine?' These are a few of the many questions which the growers are asking. Recommendations have been strong for nicotine sulphate and mineral oil in the second brood and I believe this has been the practice most commonly used. As a matter of fact, spray manufacturers did not put in heavy stocks of arsenate of lead for the second brood, so I think we are safe in saying that less arsenate of lead has been used in the second brood spray than ever before...."

THE GRADUATE SCHOOL

The Graduate School of the Department will open the 1933-34 school year the week beginning September 25. Classes will meet in the Department buildings at 4:40 or as soon thereafter as the students can assemble. Full information concerning the courses, given at very low cost, may be obtained from Dr. A. F. Woods, Director of Scientific Work, who is Chairman of the Graduate School.

The Graduate Courses already listed include Control of Plant Diseases, Advanced General Chemistry, Soils and Fertilizers, Plant Genetics, Advanced Statistics for Biological Workers, Recent Advances in Enzyme Chemistry, Principles of Animal Pathology, An Introduction to Organic Chemistry, Advanced Organic Chemistry, Physiological Chemistry, Taxonomic Mycology, Comparative Nematology, Advanced Statistical Analyses, Adjustment of Observations, Plant Geography, History of American Agriculture, Business Cycles in Relation to Agriculture and Soils of the United States Based on the Atlas.

The Undergraduate Courses are those in Glass Blowing, Systematic Botany, Interpretating Agriculture and Home Economics, Editing Manuscripts on Agriculture, Home Making and Related Subjects, Elementary Statistical Methods, Administrative Law, Scientific French, Intermediate Scientific German, Elementary Russian, Advanced Russian and Elementary Spanish.

An interesting addition to the Graduate Courses will be "Scientific Instruments and Their Use," a composite course of thirty lectures by Department workers and others from the Bureau of Standards and other laboratories, one or more lectures to be given by each instructor. The course will deal with the design, principles, manipulation and field use of a selected number of important instruments, especially those in which new technique has been developed or which may be applied in the solution of biological or other problems.

Other courses will be added from time to time as a sufficient number of employees demand them and suitable instructors can be found. Those desiring courses in special subjects, either graduate or undergraduate, should confer with others interested to see if there is enough interest to make the courses desirable and self-supporting.

As is generally known, graduate work in these Department courses is accepted by a number of standard universities as credit toward a higher degree, and a number of students have, in past years, filed the School's certificates with leading universities, receiving credit toward Ph. D, M.A., M.S.B.A. and B.S. degrees.

ADMINISTRATIVE NOTES

Gasoline — A number of our field men have arranged with gasoline companies for credit facilities in purchasing gasoline at service stations in different localities. Although different methods of extending this credit are used, the general plan calls for the sale being reported by the service station to the headquarters office which issues a voucher covering monthly purchases. This affords the advantage of doing away with frequent cash purchases and the issuance of tax exemption certificates for each purchase, as the monthly bill is paid on Form 1034 and one tax exemption certificate is issued to cover all purchases.

A credit plan made available to Government employees by the Texas Company under Government contract in effect in the State of Wyoming, provides for the issuance of purchase books, upon request, each containing 25 forms (in triplicate) for the purchase of petroleum products. The book bears the license plate number of the particular car, together with the Department, Bureau and Division title. The traveler in such a case drives up to the Texas Company filling station, obtains the necessary gasoline, oil, or grease job, and instead of paying cash merely fills out one of the forms in triplicate, surrendering to the filling station attendant two signed copies, and retaining the third copy in the book. At the end of the month the headquarters office of the Texas Co. bills the field station for the total amount of the forms sent in by the various filling stations, supporting the voucher with copies of the forms as issued by the traveler, these forms to be checked with the retained copies in the traveler's book. Thereupon Form 1034 to cover is issued for payment from Washington, one tax exemption certificate being issued and one certificate or original statement. This method has several advantages and is recommended wherever arrangements to this end can be made with gasoline companies.

Tax Exemption Certificates. — Some of our employees who make occasional trips in their Government cars are somewhat confused as to the method of procedure where tax exemption certificates are not accepted by gasoline dealers.

The proper procedure in such cases is to prepare Form 1012d, subvoucher, in duplicate, covering separately (a) the cost of the gasoline and (b) the State tax, and include both copies of receipts with your reimbursement account with which the charges are listed. A statement should be included also showing that the dealer refused to accept tax exemption certificates, and that tax is paid by the retailer to the wholesaler (or to the State, as the case may be). Full reimbursement will be granted under these conditions, covering both the tax and the gasoline

ADMINISTRATIVE NOTES

Authorization Amendments, etc. When increases in the amounts under letters of authorization are desired, specific request should be made on Form H. C. & D-1-A, and care should be taken to make these applications sufficiently in advance so that the necessary funds are set up to your credit in this office before vouchers are submitted for payment under the authorization.

Occasionally, we are requested to transfer balances from one letter of authorization to another. This is done by reducing one authorization and issuing an amendment increasing the other. As it is very easy to overlook a request of this kind included among other items in a general letter, you will be better protected by requesting the increase on the Form H.C. & D-1-A, these forms being handled promptly in accordance with a standardized procedure.

Bills of Lading. It has come to our attention that in some cases memorandum copies of Government bills of lading used to cover freight and express shipments have not been sent in to the Bureau promptly at the time the shipment was made. This has resulted in charges being incurred without a corresponding charge being entered on our accounting records to provide for payment and protect the liability.

In every case, memorandum copies of these Government bills of lading should be sent to the Bureau as soon as the shipment is made. Your cooperation in making sure that this is done will be much appreciated.

Chemical Society. We have been advised that the fall meeting of the American Chemical Society will be held this year in Chicago during the period September 10 to 15 inclusive; that in addition to the usual sessions of the Divisions of Organic and Biological Chemistry the meeting will be distinguished by a one day symposium of the joint Divisions of Organic, Biological and Medicinal Chemistry for the presentation of border-line papers. We have received no formal notification as yet with respect to the Department's policy in authorizing attendance but we are of the opinion that it will be possible to obtain favorable consideration for our employees who wish to attend the meetings at no expense to the Government other than salary.

It will be appreciated, however, if you will advise Mr. Schoenhals immediately about this, as this notice is reaching you rather late in the day, so to speak. We distributed a general office memorandum on the subject August 19.

Vol. 5, No. 17 September 1, 1933

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

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FRUIT DISEASES

J. B. Demaree, Alabany, Ga.

"Considerable time was devoted during the first week of this report period to examining the various rosette experiments where zinc sulphate was used," says his report for the August 19-26 period. "Rosetted trees that were sprayed with a .25 per cent solution of zinc sulphate during April, May and June are now free of rosette symptoms. Where zinc sulphate was added to Bordeaux mixture and used during May and June the trees now have more rosette than other trees sprayed with zinc sulphate alone applied at the same time. Zinc sulphate applied to rosetted trees after the latter part of May had no beneficial effects.

"Results of spraying with zinc sulphate may be summarized as follows: Beneficial effects may be expected if the spray is applied during April and May at the time the trees are making their rapid spring growth. Spray applied after the main twig and leaf development has been made and the rosetted leaves have been formed, will do little or no good unless the trees make a mid-summer twig growth, as they sometimes do. Zinc spray may be considered a preventive and not a cure, as to get results the spray must be applied before the rosette symptoms appear. The beneficial effects of zinc are at least partially suppressed when added to Bordeaux mixture. Rosetted trees treated with zinc sulphate in 1932 by placing the zinc salt in holes in the tree trunks still show beneficial effects. While those trees are by no means free of rosette, they are making a good twig growth and look much better than non-treated trees in adjacent rows.

"Our most variable results with zinc sulphate occurred when the salt was applied to the soil. It seems that soil composition and structure will determine very largely whether trees treated by the soil method will respond. Results have only been secured where heavy applications have been made. Eight-year-old trees receiving from 10 to 20 pounds have responded splendidly, while a less amount in the same orchard gave poorer results. For immediate results, the dosage must be considerably heavier than we previously thought. Our work so far also indicates that in order to get results the first year from the soil treatment, the material must be applied during February or March, sometime before twig growth has started."

Lee M. Hutchins, Fort Valley, Ga.

"We are getting a good many reports of defoliation of peach trees, and upon examination we have found that it is undoubtedly due to Calcium Arsenate dust applied to cotton," he wrote on August 26. "All of the cases we have investigated would seem to tie up with the dusting of nearby cotton fields."

FRUIT DISEASES

J. R. Cole, Shreveport, La.

"Sitten, Alben and I checked on flooded orchards the latter part of the week," he writes on August 26. "Trees in the Skannal orchard that have stood in water for 30 days are apparently uninjured. The foliage looks good and altho there has been some drop of nuts, about 85 per cent of them show insect injury. High winds may have been responsible for the dropping of the other 15 per cent. I remember having seen pecan trees stand in water for 90 days (about) near Baconton, Ga. several years ago. I do not think these trees had any nuts on them. The foliage turned yellow, but they turned green again after the water receded. I do not remember about the crop of nuts the following season, but there was no permanent injury.

"The rainfall in the Skannal orchard was .30 of an inch in June, and 25 inches in July. We observed a pear tree near this orchard that was surrounded by water for two weeks. It is located in a cotton field and all the cotton was killed. The pear tree is losing its foliage, but cottonwood and hackberry trees near by are apparently uninjured."

He had written on August 19: "On Monday of this week I answered an S.O.S. call to the Van Deman orchard at Ferriday, La. The owners of the orchard, Messrs. Thomas and Bullis, waited until the foliage of their Van Deman trees was in a precarious condition before giving the alarm. They have 1400 trees of the Van Deman variety and the Vein Spot fungus, Leptothyrium mervisedum, is causing defoliation and the leaves remaining on the trees are badly diseased. In fact there is over 90 per cent infection on the leaves, this being the only part of the trees infected so far as I have been able to determine. The other 3000 trees in this orchard are infected with Vein Spot and Downy Spot, Mycosphaerella caryigena, but the foliage is not injured as severely as that of the Van Deman variety. The growers dusted this orchard two years ago with fair results and they will either dust or spray next season. Due to an exceedingly dry Spring, Scab, Cladosporium effusum, has not caused serious damage to the Van Deman variety.

John C. Dunegan, Fayetteville, Ark.

Writing on August 26th, he says: "The apple harvest is well under way in the Springdale-Rovers-Bentonville area. The Jonathan variety has developed a fair degree of color in most of the orchards.

"One grower at Springdale told me he sold 160 bushels of U.S.No. 1 Jonathans at $1.00 a bushel. The same grower disposed of approximately 3,000 bushels of the King David variety at 65-70 cents a bushel. The obscure "King David Spot" disease was not present in this orchard this year, although in 1932 and 1931 it caused considerable loss."

FRUIT DISEASES

Paul W. Miller, Corvallis, Ore.

"Filbert shrivel, a term used to designate a disorder which is characterized by a failure of the embryo to grow, resulting in its shriveling up and consequently in formation of blank filberts, was present in varying amounts in every filbert planting visited," he reports August 26. "Counts indicate that it is more prevalent in relatively young Barcelona filbert plantings. It is also present in significant amounts in many Brixnut filbert orchards. There is a considerable number of filberts which show no evidence of the trouble from the outside as yet, but the trouble is evident only when the shell is cracked and its contents exposed. It is estimated that between 10 and 15 per cent of the 1933 filbert crop in Oregon will be lost from this trouble. Attempts were made in the laboratory to isolate some parasitic microorganism from the shrivelled embryo and from the discolored parenchymatous tissue which is present within the shell. The results of all attempts made were negative, indicating that this disorder is, in all probability, non-parasitic in nature.

"Brown-stain of filberts, which was so abundant two years ago, has so far failed to become prevalent this season. It has been found up to the present in but three filbert plantings in the State, in very limited amounts. (Less than 1 per cent of the crop seems affected.)"

On August 19, he wrote: "One field trip was taken during the week to a grafted Mayette orchard in the hills at about 800 feet elevation near Sheridan, Ore. Approximately 50 per cent of the grafted trees in this orchard show damage on the trunks near the ground line due, in all probability, to winter injury. In practically all cases only the exposed portion of the black walnut root stock has been injured, but the English or Persian top above the union shows in virtually all cases no evidence of injury. The damage on the exposed black walnut root stock is characterized by the presence of brownish water-soaked bark which in many cases seems to be dead down to the xylem. In many instances the exposed black root stock is affected completely around the tree. Where the black root stock is completely below the ground line and not exposed, no evidence of any injury is apparent. In certain cases, one-half of the black root stock was exposed and the other half covered by soil. In such instances the exposed portion was badly injured, whereas the covered portion was free from injury. It would seem from this observation that pulling the dirt away from the crown and basal roots to prevent attack by Armillaria mellea and other root rot organisms is a bad practice unless the dirt is put back about the roots and crown before cold weather sets in."

FRUIT DISEASE

Paul W. Miller (Continued)

"There are several different kinds of black walnut trees scattered here and there in this same orchard. One kind, apparently a hybrid eastern black walnut, shows no injury whatever. Another sort, which is thought to be either a northern California black or a hybrid California black, shows considerable injury, particularly around the crown. It would seem from this study that different species and varieties of black walnut vary considerably in their resistance to winter injury. In this same locality there is a seedling Persian walnut orchard growing at about the same elevation. No injury whatever was noted in this orchard. It appears from this fact that the northern California black walnut or hybrid walnuts containing California black "blood' are more susceptible to winter injury than the English or Persian walnut."

During the week ending August 12, counts on the amount of blight infection on the nuts were made in a number of different walnut varieties which are growing in an experimental orchard on the college farm at Corvallis. The percentage of infected nuts in the varieties examined were as follows: El Monte 86 per cent; Eureka, 81; Meylan, 76; Wheelter Franquette, 75; Imporved Franquett, 72; Selected Franquette, 45; Mayquette 71; Leib Mayette, 65; Mayette (Tribble strain) 61; Westfall, 59; Knapp, 47; and Parisienne 3 per cent.

Just why the Parisienne escaped from the blight epidemic when all other varieties about it were infected is not definitely known. It is suspected, however, that this variety, because of its late blooming period, escaped most of the early infection periods. It is planned to propagate this variety vegetatively, plant it in various sections in Oregon, and determine if it will escape blight in other sections as well as in the vicinity of Corvallis.

"A visit was made during the week to a large Brixnut filbert planting near Oregon City, Ore. Approximately 25 per cent of the trees in this orchard are partially girdled by cankers on the trunk and the foliage on the affected trees is turning yellow. From a preliminary inspection it appears that the unseasonably low temperatures which prevailed during last December have played a significant part in the development of these cankers. In certain cases, however, bacteria were found in the affected tissues indicating that bacterial blight is also probably concerned in the development of some of these cankers. There is some evidence to indicate that the winter injured tissue acted as an avenue of entry for the bacterial blight pathogene."

FRUIT DISEASES

Howard E. Parson, Spring Hill, Ala.

"Unsprayed Success pecans are so far gone with scab not that growers themselves see that the crop is lost," he writes under date of August 19. "Stuart pecans at Citronelle, Ala., in an orchard which has had good culture, were observed to be splitting and dropping from too much rain following a drought.

"The fourth and last application of spray for the season was applied to the Success scab and rosette experiments at Biloxi, Miss. This is the first season that experiments have been carried on in this orchard. Much better results with scab control have been obtained than were hoped for the first season. Very few of the nuts set will drop from scab. Unfortunately, too small a crop is set to make the results show up the best."

H. J. Bergman, East Wareham, Mass.

Writing from the Cranberry Disease Field Laboratory on August 26th, he says: "Since Tuesday we have been taking final records on experiments on the effect of spraying on the setting of fruit from blossoms sprayed when fully open. Results indicate that spraying when the flowers are open does not affect the setting of fruit in spite of growers' opinion to the contrary."

HORTICULTURAL FIELD STATION

Writing from Cheyenne, Wyo. on September 2, W. D. Roney reports that the forepart of the week was cool and unsettled. The station escaped entirely a damaging hail that fell the mornings of August 26th and 27th, the hail covering a strip about three miles wide extending from Cheyenne eastward toward the Nebraska line. Considerable damage to experimental plots at the Archer Field Station, nine miles east of Cheyenne, was reported.

"The D.A.R. at the termination of their State convention in Cheyenne on the afternoon of September 2, visited the station some 50 strong and conducted a 'tree gift' ceremony in connection with the George Washington elm which has been growing in the care of this station for the part few years.

"Mrs. Alfred Johnson, Past State Regent, conducted the ceremony, and Governor Leslie made a speech of acceptance. When the tree has grown sufficiently to brave the elements it will be sent permanently in the State Capitol grounds."

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

G. B. Ramsey, Chicago, Ill.

"Although we are not officially on exhibition as part of the Century of Progress, our Market Pathology laboratory at the University of Chicago is drawing a considerable number of visitors," he reports August 26. "Recently we had a professor from Texas with a class of eight boys who were especially interested in the marketing of fruits and vegetables. Old 'grads' as well as foreign visitors usually stop in to see what we are doing. Yesterday we had a plant pathologist from Brazil as a special guest.

"The last week of July was given over to a study and analysis of two test shipments of canteloupes from Arizona. The melons were harvested at different stages of maturity. Temperature records were made and hydrometer tests run on representative samples on the day of arrival and again after three days at room temperatures. The greenest fruit registered 6.7 (Brix) and the ripest fruit on arrival 9.85. The vine ripened fruits were in good eating condition on arrival, but they showed considerable bruising and by the third day a high percentage of decay developed.

"Cucumbers from Maryland showed an unusual amount of shriveling on arrival at mid-west markets this season. Bacterial spot was also quite damaging in some shipments.....In some lots of California peas Gray Mold Rot has been noted causing decay in as high as 35 per cent of the pods. This disease is not common on peas, except under especially favorable weather conditions....A large part of the Michigan celery arriving in Chicago is badly spotted with Late Blight. Michigan tomatoes are also showing spots due to the Bacterial Canker organism."

H. C. Diehl, Seattle, Wash.

"Clear warm weather continued in the Puget Sound region of the Pacific Northwest," says the report of August 26. "The forest fire situation which has been unusually favorable during the summer in spite of long periods of sunny dry weather, has become a dangerous problem in some areas in Western Oregon and Washington....The second crop of peas in the White River Valley will be harvested next week and since the RFC has now approved a loan for the frozen packing of some of this tonnage, packing will soon commence. There are, of course, privately financed packers also who are handling the crop surplus from this area.

"Dr. Rexford Tugwell and his associates visited the Laboratory on Thursday. The Laboratory facilities and cold storage plant were inspected, and some time given to the examination of a few samples of frozen fruits and vegetables.

Further conferences were had with local RFC representatives regarding to the details of freezing preservation and the quality of material being prepared under RFC loans."

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

Edwin Smith, Wenatchee, Wash.

"Dr. Gerhardt and Mr. Ezell were busy with enzymes and acids, with various field trips to check up on pear maturity, pear washing equipment and the like," he reports for the week of August 14 to 21.

"The writer completed the summaries of the spring's work on spray residue and spent several hot hours in the field in preparation for this season's washing experiments.

"The packing of Bartletts started in some orchards last week. Flemish Beauty also were being packed in a couple of houses.

"Renewed energy on washing is being observed. The Produce Company is using Sodium Silicate at 95°. The Fruit Growers' Service Company has installed pre-dip tanks wherein the pears float to the feed in an HCl. solution for about .75 min.

"The weather has been hot."

POTATO INVESTIGATIONS

C. F. Clark, Presque Isle, Me.

Writing under date of September 2, Doctor Clark reports that the long continued drought was broken by a rain the first of the week.

"The rain came a little too late to be of much benefit to the early maturing varieties, the vines of which are mostly dead," he reports. "It will, however, considerably increase the yield of the Green Mountain, the vines of which will remain green for some time unless killed by frost. Because of the dry weather conditions, there has been but little late blight.

"Some Irish Cobblers are being dug, but the shipments are not heavy. The price is reported to have been a little weaker the past few days.

"We expect to start digging the experimental plots the first of next week."

POTATO INVESTIGATIONS

W. C. Edmundson, Greeley, Colo.

"Friday night some snow fell in the northern part of the county and in the higher altitude of the mountain sections," he writes on August 29th. "The lowest temperature recorded at the station was 48°, but growers seem to be wondering over the possibility of an early frost.

"Yesterday was visitors' day at the station and it is believed that it was one of the most successful we have yet held. About 200 growers were present and much interest was shown. Twelve members of the Agricultural College staff were in attendance. President Lory was also able to attend this year. He inspected all of the buildings at the station and was very complimentary regarding the improvements which we have made and also expressed himself as being very well satisfied with the visitors' day program. Mr. Babb of the Cheyenne station, and Dr. Haskell, Extension Pathologist of the United States Department of Agriculture, were also with us yesterday. Dr. List, State Entomologist, gave an interesting talk on the control of psyllids. He presented data showing the results obtained this year in the early potato section from lime and sulphur sprays. He stated that while the control of psyllids was still in the experimental stage, that the results obtained seemed to justify recommending lime and sulphur, until something better is discovered. Mr. Schall discussed potato diseases and explained his experimental work. Dr. Wade and Dr. Zaumeyer discussed their bean work with visitors at the field plots and many growers were much interested in the work, especially in some of the new varieties that seemed to have high yielding qualities. Mr. Stewart of the Agricultural College discussed alfalfa varieties and County Agent Simpson also took part in the program. I gave a short talk on the season's growing conditions and on potato culture in general. After a short program I conducted a tour of the farm, discussing our experimental work, and our seedling program. Our most promising seedlings received much favorable comment."

P. M. Lombard, Presque Isle, Me.

Report for the week ending August 26: "For the most part early varieties are ready to harvest. A few cars of Irish Cobblers have been dug and shipped from the Houlton section. Rain at this time other than putting the soil in better condition for harvesting, will be of little benefit to the early sorts. On the other hand, the yield of the late varieties will be greatly increased.

"Some of our experiments with early varieties will be harvested next week, and harvesting of isolation plots will begin about September 4, followed by plots in the main field."

FRUIT AND NUT PRODUCTION

H. L. Crane, Albany, Ga. Week ending August 19.

"The rosette experiments in the Bacon Pecan Groves, Illinois-Georgia Pecan Groves, the orchard of Mr. Lee Hansford at Americus, and on the station grounds at Philema were gone over by Crane, Demaree, and Fowler during the week. These experiments show that where fairly heavy applications of zinc sulphate have been made, marked recovery has taken place. When small amounts of zinc have been used the color of the foliage has been greatly improved and there is much less leaf breakdown even though the trees are still rosetting badly.

"It now seems that on all the soils worked with best results are secured from broadcasting the material over considerable area of the soil similar to the common practice of applying fertilizer to trees. Three applications of zinc sulphate as a spray have entirely overcome the rosetted condition of the trees. However, zinc-sprayed trees are yellow and do not show the greatly increased vigor of trees which have had the zinc sulphate applied to the soil.

"It is painful to report that we have lost our crop of nuts on the young trees on the station farm at Philema. The Schley trees in this orchard set a good crop of nuts this year. considering their age. During the past month they have been dropping badly. A sample of the fallen nuts was collected and turned over to the entomologist here, who examined the nuts and reported that 98 per cent of them were infested with shuck-worm.

"During the past week a large number of complaints have been made by growers in regard to the dropping of pecans in their orchards. Examination of the dropped nuts by the entomologist shows that shuck-worm is primarily the cause of this drop. I consider shuck-worm our most important insect pest and one of the most, if not the most, important factors limiting nut production in this section. Every year, except in 1931, when a severe drouth occurred, damage from this pest has been great. The damage done by this insect pest has, I believe, been much greater than thought because the nature of the injury has not been understood, particularly so when the nuts were small."

E. V. Shear, Hood River, Ore.

In a report on Hood River conditions, dated August 12, he states: "A few Gravensteins are picked, representing the first pome fruits harvested this season. Crenshaw, however, states that commercial pick-of Gravensteins has not yet started. It seems peculiar that the first Gravensteins were picked this year before the first Transparents, yet a few Transparents that have been noticed do not seem overripe or otherwise abnormal."

FRUIT AND NUT PRODUCTION

C. E. Schuster, Corvallis, Ore.

"We have been making some observations on winter kill or something that is yet called winter kill," he writes on August 19. "In one orchard at an elevation of about 1,000 feet, it seems probable that at least 25 per cent of the trees are doomed now. These trees are Mayettes grafted on some form of California black walnut. It is interesting to note in connection with this dying and killing that there are a few black walnut trees in the orchard that evidently came up as sprouts when the Mayette top died off. Part of these are perfectly healthy, while some of them seem to be practically dead around the soil line. This same condition holds throughout the orchard, especially where the black root is exposed above the ground. The peculiar condition noted is that the injury in many cases is in pockets. At other times it is extended practically around the tree. Where the injury shows in pockets new tissue is rapidly forming over the wound, but there is always a heavy flow of sour sap from that place. We have found one Franquette orchard in about the same condition, sometime previously."

B. G. Sitton and J. L. Pelham, Shreveport, La.

... Report for the week ending August 26: "Wednesday, accompanied by Mr. Cole and Dr. Alben, an inspection was made of orchards in the vicinity of Shreveport which had been flooded by the rains in the latter part of July. On one orchard the flood remained on the orchard for about 48 hours, killing alfalfa and other plants in the orchard but there was no apparent injury to the pecan trees. Some drop of nuts had occurred but in most instances this could be accounted for. This was caused by insect injury and not by flood.

"In another orchard some of the trees were flooded for approximately two weeks and water was still standing around one tree, with neighboring trees in soil which was practically saturated, although there was no water on the surface. Even the trees which were under water for practically a month show no evidence of injury. The foliage was still green and although there was some shed of nuts, an examination disclosed that approximately 85 per cent were injured by shuck worm and the other 15 per cent showed other signs of injury, either whipping in the wind or some other mechanical injury. Near this orchard we saw a pear tree on which practically all of the foliage was dead, apparently due to the flood water. Cotton and corn in an adjoining field were killed completely. Other trees such as hackberry and cottonwood, show no apparent injury.

"On August 24, a visit was made to orchards in the vicinity of Toledo, Tex. which was flooded for about 10 days. Here, again, no evidence of damage by the flood water was seen, even though some of the trees were standing in the soil which was still practically saturated."

FRUIT AND NUT PRODUCTION

Elmer Snyder, Fresno, Calif.

"High temperatures continued over the week end of August 12, 13 and 14. At Fresno the respective maximum temperatures were 113, 114 and 116. Considerable leaf burning was noted on the vines at Chico, which had relatively the same temperatures. Only an occasional vine at the Fresno vineyard showed leaf burning.

"In commercial vineyards, these excessive temperatures added to previous injury from leafhoppers, heat and lack of water. The condition of the grape crop in California is estimated as of August 1st by the Bureau of Agricultural Economics was as follows: Table grapes, 68 per cent of normal, Raisin grapes 67 per cent, and Wine grapes, 69 per cent. Revision of these figures downward, especially for table and raisin grape varieties, will probably follow the abnormal temperatures which have been prevalent since this August 1st report."

Geo. F. Hoffman, Meridian, Miss.

"You will be interested in knowing that the program of our work appears to be attracting considerable attention and that everything is going forward in a satisfactory manner," he reports on August 30. "I feel that our cover crops, representing almost a wilderness of organic matter in the groves, have served one of the best and most outstanding demonstrations possible that has been established in this section. Our fencing is about half finished, this work being carried along gradually for the purpose of doing the work with as much saving as possible, and is attracting very favorable comments. Odds have seemed against us in the construction of the well tower and tank. Consequently, with the completion of what appears to me to be a very pretty tank and tower, I am very proud of this piece of work. The value of the station as a whole seems to be growing in the eyes and use of the nearby farmers, which is indicated by our increased number of visitors, both to the office and the station."

C. F. Kinman, Sacramento, Calif.

"The prune crop in this valley is very late in ripening this year," he states in a letter dated August 31. "The harvest was just getting under way on the 28th, which means that it will not be finished until well after the middle of September. After this date the climate is seldom satisfactory for sun drying of prunes and there is danger of rain, so the prune grower has something to worry about if he does not have a dehydrator at his disposal."

TRUCK CROP DISEASES

Notes from Doctors Zaumeyer and Wade: From Greeley, Colo.

"About the middle of August we ran a canning test on our C-30 hybrid which is mosaic tolerant. This bean is about ten days earlier than the Stringless Green Refugee, very productive and of high quality. The latter variety is one of the most popular canning varieties, but it is quite late in maturity and very susceptible to mosaic. Hundreds of pod measurements were recorded in singleplant lines of this hybrid which were made last summer. In addition to these lines, we are increasing a block of this seed we hope will produce about 4 to 5 bushels of seed.

"Other hybrid material from the F-1 to the F-4 generation is likewise looking very good. Many of these show a high degree of resistance to mosaic and are producing some very fine marketable pods. A number of our F-1 crosses were made for anthracnose resistance which will be tested in the greenhouse next winter.

"One of our Henderson Bush Lima lines, the selection which was made in 1931 and grown last year here in Greeley, Colo., appears to be about ten days earlier than the commercial strains. At the present time it has passed the canning stage with a small percentage of ripe pods in evidence. The check, planted at the same time and grown under the same conditions is only coming into the canning stage. The early strains is highly productive and very uniform. From the original selection make in 1931, we have this year about 1,350 feet of row which will produce about three bushels of seed."

FRUIT AND NUT PRODUCTION

A. D. Shamel, Riverside, Calif.

Writing on August 21, he says: "Last week I spent a day in the citrus orchards in Orange County, mainly Valencia orange and Eureka lemon groves. It is apparent that a much larger proportion of the Valencia orange crop is still to be picked than normal for this time of year. This condition is due to the pro-rate now in force for the Valencia shipments and local sales. The prospects for next season in the Valencia groves that I visited are better than was anticipated a few weeks ago. The young fruits are now large enough to be easily seen, and in the orchards that we are interested in from the bud selection point of view, there is another heavy set of fruit, perhaps even more than was the case last season. In the lemon orchards that we visited, the prospects are for a rather heavy late summer and fall set."

BULB INVESTIGATIONS

As the September 1 NEWS LETTER went out, Doctor Griffiths came in--from a two-months' absence on Puget Sound, where he is reliably reported to have been attending to digging and planting bulb stocks at the Bellingham station. Or, as one of the Bellingham papers put it, "working to beat the Dutch!"

During July and August the greater part of the stocks on the place were handled--dug and replanted, although there were about two acres which are lifted only periodically, some of them not disturbed for indefinite periods.

"Crops in general never were better, daffodils, tulips, and hyacinths being particularly fine,""he reports. "During the month of August there were planted a half acre of Darwin tulips and crocus; a third of an acre of Mendels and hyacinths, a half acre of daffodils and iris, and nearly a half acre of lilies. These, together with a half acre of miscellaneous stocks and two acres of naturalized materials constitute our total plantings adjusted to the reduced budget.

"The methods of farming instituted at the station some years ago are proving eminently justified. Tile drainage and deep culture on this retentive soil has gotten us by with maximum crops in one of the wettest winters in history. Our tulip crop again for the fifth consecutive year has maintained the phenomenal yield of 70,000 merchantable bulbs to the acre plus maintenance of stock. This is accomplished by tile drainage, deep, 20-inch, culture, perfect contourage, and incorporation of humus through sod and cover crops."

ADMINISTRATIVE NOTES

Personally-owned Automobiles, etc. In the absence of information either on the mileage statement or in the account to the effect that no travel was performed within the corporate limits of the headquarters of employees traveling in personally-owned automobiles, the auditors of the Bureau Accounting Office will assume that the mileage claimed includes travel within such corporate limits and will suspend the cost of such mileage as appears from their records to be within such limits Therefore, the record of all travel in personally-owned automobiles should begin and end at the corporate limits of said headquarters, whether field station, city or District of Columbia, and this fact made plain on the "Report of Travel by Motor Vehicle." This may be indicated by placing the words "from corporate limits of ____" or "to corporate limits of ____" before the name of the headquarters on the mileage form. If it is not brought out in the record of mileage claimed, a statement should be placed at the bottom of the form to the effect that no mileage was incurred within the corporate limits of headquarters.

ADMINISTRATIVE NOTES

Semi-Monthly Pay Checks. In the August 15th issue we dropped a slight hint concerning a new plan by which field workers would be paid twice a month instead of once. We didn't have very much information, but we wanted to issue a warning so that the shock would not be too great when the change actually starts to work. Mr. Schoenhals has now come to our aid by distributing a general memorandum giving a few more details. It says:

"As a result of an extensive study by the Disbursing Clerk, involving a rearrangement of check writing work and the use of recently developed mechanical appliances, the Department Disbursing Office is now in position to make regular semi-monthly salary payments to the field personnel.

"Accordingly, this Division will hereafter, beginning with the month of September, pay field men semi-monthly, upon receipt in this office of the usual form of salary certifications for the periods from the first to the fifteenth and the sixteenth to the last day of the month, such certifications to be without expense to the Government for telegraph, radio or air mail postage.

"A great deal of extra work is involved in this Division and in the Bureau accounting office in the preparation and auditing of two sets of payrolls each month instead of one, and although every effort will be made to handle them promptly, there will very likely be some delays that cannot be avoided. It is hoped, however, that though mid-month payments, field officers will soon adapt themselves to a somewhat later receipt of the end-of-the-month pay check and become accustomed to look for the arrival of salary checks on approximate dates, differing as to locality and the occurrence of holidays near pay periods during both the first and second half of each month."

Automobile Repair parts Our attention has been called to the fact that the Simmons Manufacturing Company, 3405 Perkins Ave., Cleveland, O. manufactures a complete line of repair parts for Ford and Chevrolet equipment, and maintains stocks of such parts in several cities of the United States. Their list prices are no higher than those of other reliable dealers, while they allow us larger discounts. Under the circumstances, where it is found necessary to ask bids for such parts, be sure and include the Simmons Company in your list of prospective bidders.

Vol. 5, No. 18 September 15, 1933

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I M O N T H L Y N E W S L E T T E R .

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This NEWS LETTER is for distribution only to employees of the Division, and the material contained in it is of an informal and confidential nature and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official or final word on the subjects.

Vol. V Washington, D. C., October 2, 1933. No.19

Simply working to "beat the Dutch."

Another of our so-called minor lines of investigation is fighting for a place in the sun--the lily breeding work which Dr. David Griffiths is conducting along with his general bulb investigations, and at little or no added cost. A newspaper man making a visit to the U. S. Bellingham Bulb Station writes enthusiastically of these hybrids.

"What Doctor Griffiths has accomplished in hybridizing and propagating new lilies seems little short of miraculous," he says. "To see the hundreds of lily varieties he has collected is a revelation, but to see the numberless hybrids he has produced is yet more astonishing. These hybrids, without exception, far exceed their parents in vigor and beauty. There are blooming lilies 11 feet high. Some of the Regale hybrids are of unbelievable size and beauty." And he adds: "Some may ask why the Government maintains farms merely for the propagation of flowers. Through this work it has been shown that we can raise narcissus, tulip and hyacinth bulbs literally 'to beat the Dutch,' and instead of importing millions of them annually from Holland, we now ship them from Puget Sound in carloads."

Yes, it is true that bulbs may be of little use as a direct source of food, but they rank high as an indirect source for thousands of people depend for food and lodging upon the growing and handling of ornamentals. Without the aid and information supplied by Doctor Griffiths' investigations the present rapidly developing commercial industry based on bulb growing would not be possible. In fact, when he started the work even supposed experts told him the thing couldn't be done. And now bulbs are going out from Puget Sound in carload lots!

FRUIT AND NUT PRODUCTION

Geo. P. Hoffman, Pecan Field Station, Meridian, Miss.

"Interest in research generally, as particularly applying to the work which we are doing here, is increasing, with the result that we are having a greater number of visitors at the station from week to week," he writes September 9. "Information as to cover crops and soil building program seems to be in greatest demand. Our cover crops have attracted wide attention and we have actually observed visitors so much interested in the two cover crops being grown--Crotalaria and Brabham peas--that they pick off a few pods of the peas and take away individual plants of the Crotalaria. Many of the less aggressive visitors lament the fact that we are turning in the soil 'such a fine hay crop.'"

On September 2 he reported: "Crops, generally, including our pecan trees, are suffering for lack of rain....The mulching of our pecan trees, as previously reported, appears to have been helpful. The trees of the Mahan variety in our variety planting have made continuous and very satisfactory growth during the unfavorable weather conditions of late July and August. The performance of these trees would seem to suggest that this variety might readily adapt itself to summer weather extremes.

"The extreme heat during August has been very hard on our pecan plantings, growth has been noticeably retarded, and the percentage of dead trees is greater than was previously thought and observed. A condition of retarded growth, slowly dying and dead trees, is general with all of the paraffin-coated trees and is more outstanding in the one-year-old paraffin-dipped trees--a larger percentage of trees of this age showing unsatisfactory growth and being dead than the two-year-old brushed-on paraffin-treated trees. With the oncoming of very hot weather the extreme heat appears to have resulted in the bark on the west side of the tree becoming completely oil-soaked or saturated with the oil from the paraffin coating, the development of a fluffy or blister-like condition and a change of color from the natural healthy green to a sooty mold-like black. The fact that this condition appears to be much worse in the one-year-old trees would seem to suggest that the intake of the oil has been greater than in the older trees having tougher bark. As mentioned in previous reports, the resulting effect of coating trees with paraffin is worthy of very careful and thorough investigation."

Elmer Snyder writes from Fresno, Calif. on September 9, that a plot of vines of Solonis x Othello No. 1613 were budded at the station during the week; 1,000 vines being budded. The vinifera varieties used were Sultanina, Chanez, Emperor and Gros Guillaume (Ribier). Since the stock was all the same varieties and uniform in size, more vines were budded per day per man than last season--250 buds per day by each.

FRUIT AND NUT PRODUCTION

W. W. Aldrich, Medford, Ore.

"On Tuesday, September 5, a strong wind blew about 4 hours in the afternoon, with the result that most orchards south of Medford had from 10 to 20 per cent of the Anjou, Bose and Comice fruits blown off," he reports September 11. "From my observations, I judge that the drop of Bose was heavier than for Anjou. This is odd, for according to the pressure test, the Bose are much more immature than the Anjou. Usually, the Bose stick very well, and the Anjou fall much the worse of the two. At the station, the drop was about 12 per cent.

"The soil moisture in the New One Irrigation plot reached the wilting percentage this week. With harvest fully two weeks off, it was decided to apply a second irrigation. I was very much interested to observe the effect of irrigating a plot which had become so dry and in which the trees had suffered until many had lost 15 to 20 per cent of their leaves; and so I watched fruit growth and stomatal movement closely. Fruit enlargement started immediately after the water reached each tree, but the stomata did not open. Apparently this fruit enlargement was due to water intake. Some fruit samples were taken to check this. At the end of three days the stomata responded, and the fruit growth showed a decided second increase in growth rate. Apparently the second increase was due to carbohydrate intake by the fruit."

On September 4th he wrote: "This past week was characterized by much weeping and wailing throughout the Valley about the large percentage of worms (codling moth larvae) in the Bartlett fruit. The percentage varied from 5 to 95 per cent, with many orchards showing between 30 and 50 per cent of wormy fruit. Immediately spray recommendations and so forth were criticized and condemned. At present it is not clear whether a strain of codling moth more able to penetrate sprayed fruit has been developed by natural selection, or whether the spray program was at fault. Some growers who applied a calyx spray feel their fruit has less worms than fruit that received no calyx spray. Other growers are certain summer oil will be necessary another year. However, it certainly was 'Codling Moth Week!'"

At the Medford station some 700 lugs of Bartletts were harvested at the first picking, from which 320 boxes of packed fruit were obtained. "Our wormy fruit was only 8 per cent of the total harvested, but rough and misshaped fruit necessitated heavy culling....The partial defoliation of Anjou trees, which apparently suffered during the hot periods, is continuing. In New One Irrigation Plot, this defoliation is much greater for the 'lightly' than for the 'heavily' pruned trees....Measurements of fruits on ringed limbs with just 300 sq. cm. of leaf area per fruit showed the same increase in volume for fruits having only spur leaves as for fruits having only shoot leaves. Apparently the spur leaves were as efficient in supplying food to the leaves as were the shoot leaves."

FRUIT AND NUT PRODUCTION

H. L. Crane, Albany, Ga.

"During Tuesday and Wednesday (September 5 and 6) the Albany section was visited by a tropical storm. Only a little more than an inch of rain fell during the storm, but a high wind for 48 hours did considerable damage to pecan trees. This wind broke large limbs, but most of the damage was done by the whipping off of shoots, leaves and nut clusters. In some orchards the tops and windward sides of the trees were badly defoliated by the wind. Damage to the pecan crop has been estimated at 15 to 50 per cent loss of the year's crop. This is much too high, and I expect 10 to 15 per cent loss would fully cover all damage done."

"Growers who have sprayed with Bordeaux mixture during the season were forced to apply a spray during the week for the black pecan aphid in order to prevent defoliation of their trees," he writes September 2. "Some pecan growers have expressed the opinion that spraying pecans for disease control with Bordeaux will never be followed to any extent because of the injury which is likely to occur and because of the menace from black aphids which seems sure to follow Bordeaux spraying.

"The drop of immature nuts, caused largely by shuckworm, has continued. Some growers have reported as much as 50 per cent loss to their crop of Schley from this cause. At Philema our crop of nuts on young Schley trees has been a total loss from this trouble.

On August 26th he had written: "During the week our first harvest of the early strains of Crotalaria spectabilis was made. These early strains have been selected from field plantings and are now being grown for the second year. It is our hope that strains of this Crotalaria can be developed which when planted in the spring after the winter cover crop has been plowed under, will grow to a sufficient height to give a heavy yield of organic matter and at the same time produce seed which will mature in time for turning under and the planting of a winter cover crop.

"Counts show that the percentage alive of the buds set in our topworking and propagation work on the station farm was exceptionally high, running from 85 to 99 per cent. The trees in our fertilizer experiment at Philema were sprayed again with zinc sulphate to prevent rosette.

Mary K. Bryan's paper on "Three Bacterial Spots of Tomato Fruit," issued as Department Circular No. 282, is now ready for distribution.

FRUIT AND NUT PRODUCTION

George F. Waldo, Corvallis, Ore. September 16.

"Part of Monday and Tuesday was spent in central Oregon with Mr. O. T. McWhorter, extension horticulturist. We went with the purpose of looking over the everbearing strawberries there. We found growers were having difficulty with the varieties they are now using principally with Superb, which is an old variety and which often reverts to the spring bearing habit. They have been propagating from runner plants and have consequently been unconsciously propagating the plants with the spring bearing habit."

B. G. Sitton and J. L. Pelham, Shreveport (and Robson), La.

Week ending September 16: "Reports from other orchards indicate that scorch is severe over much of this territory. Black aphis are also making their appearance in many orchards also although at the present no extensive damage has been observed. However, considering the rapid rate of multiplication and the wide distribution, the condition is alarming. Reports from various sources, and observations by the staff here, indicate that North Louisiana will produce the largest crop of pecans in its history. It has been estimated that the crop will approach a million pounds. At the present time the condition is good, but with the disease and insect troubles and the possibility of moisture shortage, there may be some unsatisfactorily filled nuts at harvest."

C. L. Smith (Texas Pecan).

"At Austin, nut samples were collected and preserved for analysis," he writes September 2. "Shoots with clusters of nuts were ringed, some with leaves left on and some with leaves removed. Shucks of nuts were ringed also. This work was in connection with studies of filling of nuts. The buds of crossbred seedlings topworked two weeks ago were checked. Only one bud out of about 160 had died...The nut crop at Pearce farm and in this vicinity is very heavy. Stuart trees at Pearce Farm are breaking under their load, the first instance the writer has observed of such heavy crops on the Stuart variety. Considerable nut case-bearer infestation is showing up lately, but it came so late that only slight damage is resulting."

C. E. Schuster, Corvallis, Ore. September 2.

"A great amount of interest is being displayed in the matter of cover crops, due to the high price of vetch. With low income from walnuts this year, the growers are desperately searching for something cheaper than vetch at 69 cents per pound. We are finding that a good many of them are going to try mustard and turnips...We have made arrangements to put out eight test plots in Oregon with turnips and a new strain of crimson clover that came through the freeze last year without any injury. So far as we know, this crimson clover is the only legume that did not suffer. Most of the others were killed out completely. We expect to put two lots of this material in the State of Washington."

FRUIT DISEASES

John C. Dunegan, Fayetteville, Ark.

"In contrast to many reports of drought I submitted during the recent months," he confesses under date of September 2, "this week I am forced to admit that daily rain storms have interfered seriously with work in the field and have doubtless delayed the apple harvesting in the commercial orchards.

"We are able, however, to collect the drops from our apple spray blocks and were pleased to note the almost complete absence of russetting of the fruit from the plots sprayed with the new copper compounds. It is too soon to make any statements about the efficiency of copper oxide and copper phosphate in the control of apple blotch and apple scab, but the drops from the Stayman and Ben Davis trees sprayed with these compounds have a much better finish than the drops of the same varieties from trees given the standard Lime-Sulphur-Bordeaux mixture sprays."

H. F. Bergman, East Wareham, Mass.

Writing from the Cranberry Disease Field Laboratory on September 2, he says that incubator tests to determine the keeping quality of cranberries had just been started. "Judging from field observations, the quality of the berries this year will not be as good as last, as rots are becoming quite abundant on many bogs."

J. R. Cole, Shreveport, La.

Report of September 2: "The entire week was spent in the laboratory and nearby orchards assimilating data on rosette and foliage disease control. Foliage diseases are not doing as much damage in the river bottoms as they are in the hill orchards, but rosette is much worse in the river bottoms. My data indicates that both rosette and various foliage diseases can be controlled successfully by spraying at the proper time....The temperatures have been rather high, with occasional showers."

CROP PHYSIOLOGY

Dr. Lauriston C. Marshall will be at the U. S. San Diego Acclimatization Garden, Torrey Pines (La Jolla), California, for the next few months supervising the remodeling of greenhouses there and the installation of air conditioning equipment, both National Industrial Recovery projects.

TRUCK CROP DISEASES

Wm. D. Moore, Charleston, S.C.

Doctor Moore writes on September 9 that a tropical storm passed through the Charleston section the night of September 6, causing the greatest damage to truck crops in many years. "From noon on September 5, to 6 a.m. on the 6th," he writes, "the local weather station registered a total of 10.13 inches of rain. Along with this was a 50-mile per-hour wind that beat the young plants in the field beyond recognition. Our rain gauge here at the station showed a total precipitation on this date of 7.9 inches, but this was sufficient to destroy practically everything we had in the field. Since the 6th, we have had two additional rains of 1.50 and .81 inches, respectively. To date there is little known as to what will be saved in the way of growing crops. In addition to the water on the fields, the sun has been scalding any plants that showed above ground. Some estimates place the damage to Charleston County alone at $100,000. It may run even more than this."

On September 16th he wrote: "Following the storm that struck this section on September 6, the temperature climbed to an abnormally high level for this period of the year and remained there throughout the week. During the present period the same condition has prevailed resulting in a total loss of all germinating crops that were not already killed by the wind and rain. As a result, practically every field in this area has been reworked and replanted where possible. In many cases it has not been possible to get seed and in these instances there will be no fall crop. In cases where planting has been done again the crops will be delayed considerably, but present indications point to a good crop in spite of the recent delay.

"We have had to rework all of our land here at the station, and have at present practically completed all of the replanting that can be done at this time. My bean varieties were killed by the hot sun and the general planting for my mildew work came up to a very poor stand, consequently we had to replant all plots. This was done early in the week, and the seed is germinating at a rapid rate at this time.

"With no further damage from the weather, it seems now that I shall be in excellent shape with all of my work within another week and will probably not suffer any damage other than a few days of delay. Unless we get an unusually early frost, the delay will be an advantage since mildew seldom develops in this section until rather late in the season. I expect to begin some isolation work during the coming week in order to collect as many root rot organisms as possible that may be connected with our fall bean crop in this section."

FRUIT DISEASES

Paul W. Miller, Corvallis, Ore.

"During the week ending September 2, the writer accompanied members of the Western Nut Growers' Association on their annual tour in Oregon nut orchards. During the second day of the tour considerable time was devoted to a study of the results of spraying for the control of walnut bacteriosis, carried on in a Franquette orchard near Scholls, under the supervision of the writer. The growers seemed to be duly impressed with the striking benefits obtained by proper spraying with Bordeaux mixture, and many are planning on spraying their orchards during the coming season."

Leslie Pierce, Vincennes, Ind.

"The best crop of peaches in the section, both in regard to quantity and quality, was in the J. W. Kimmell orchard," he writes on August 26. "The trees in this orchard were sprayed seven times during the season with zinc-lime 4-4-50 with 2-50 wetable sulphur added to the mixture in five of the applications. The yield in the Kimmell orchard averaged six bushels per tree."

POTATO INVESTIGATIONS

O. F. Clark, Presque Isle, Maine

Writing from Presque Isle, Me. under date of September 16, he reports heavy frosts the nights of September 14 and 15, killing the vines of the late varieties so that the harvesting of these could be started within a few days. "We have made good progress in digging the experimental plots," he adds, "having completed the harvesting of the first, second and third-year seedlings and part of the increase plots of the older seedlings. Much good material was saved from these series."

Doctor Stevenson has been at Presque Isle since September, helping with the harvesting.

W. C. Edmundson, Greeley, Colorado

"More sylid yellows is in evidence now than had been expected, but it is doubtful if the yield will be very seriously affected," he writes on September 11. "I have some seedlings which show a marked resistance to sylid yellows, and a few that seem to have resistance to both sylid yellows and fusarium."

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

Edwin Smith, Wenatchee, Wash.

"The industry is very much excited over a new washing treatment started at Hannaford--White Bluffs," he reports under date of September 9.

"Difficulty was experienced in washing early Jonathans. All the treatments in the calendar were tried and finally, in desperation, they put in their hydrochloric acid solution a gallon of summer spray oil (emulsified), and results were very gratifying. From this, news spread to other parts of Washington and the method is being used in various parts of the Yakima valley with apparently very good results.

"The demand for information is so great that Mr. Ryall will have to run some tests immediately and have nitric acid digestions since we fear that the oil does more to complicate the 'stripping' method of lead determination than in actual cleansing. We have cautioned all inquirers about using oil with pears, but Mr. Ryall reports that in Yakima oil is actually being used in cleaning pears which, no doubt, will cause them never to ripen normally.

"Dr. Gerhardt and Mr. Ezell are prepared to make early pickings of Jonathans, Delicious and Winter pears during the coming week, which with their laboratory work with Bartlett and Flemish Beauty is keeping them very busy.

"Dr. Gerhardt and Mr. Harley conducted the discussion on handling Jonathans to prevent soft scald and breakdown before the Fieldmen's Association at the Cascadian Hotel on Tuesday night."

August 28th he wrote: "Dr. Tugwell arrived in Wenatchee on the evening of August 22nd and paid the laboratories a hasty call on the morning of August 23rd. We regret that in order to show him our laboratories and those of the Bureau of Chemistry, as well as those of the Traffic Association, and to visit the fruit washing and packing plants of the Wenatchee Produce Company and of the American Fruit Growers--all in the course of an hour,--our exposition of the real field of our work in fruit storage and transportation was a hopeless failure. Perhaps Mr. Ryall can redeem us when Dr. Tugwell visits Yakima.

"Growers are still spraying for codling moth, and the mixtures that they have on the trees beat all records. Infestations are reported still worse than in previous years, and residues are reported difficult to remove. Already difficulty has been experienced in cleansing Bartlett pears of Manganar residues."

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

Edwin Smith, Wenatchee, Wash. (Continued)

"New developments in commercial washing include the use of Vatsol in a predip tank by the Fruit Growers Service Company," he states in his report for the September 11-16 period.

"They have equipped all of their old Bean machines with an additional tank through which the endless carrier passes, giving the fruit a 3/4 minute dip in heated acid, with an additional 3/4 minute in a wet condition on the carrier before entering the washing chamber proper. In all but exceptionally sprayed fruit they have been able to reduce the residue below tolerance. In one of their predip tanks they tried 1 per cent Vatsol with the hydrochloric acid solution and to the surprise of us all the carry over of Vatsol did not cause serious foaming in the jet spray compartment. With this combination they have been able to clean some very difficult lots to .015 Pb. gr/lb. This company is also installing one of the large Cutler-Hoe double flood type washers in which sodium silicate will be used in the first part and cold acid in the second.

"The Victor McMullen Fruit Co. (Dow Warehouse) has converted a Stebbler-Parker submerger into a paddle-wheel type flotation washer. With HCl-Vatsol at 90° and from 1.75 to 2 minute exposures they seem to be doing satisfactory cleaning. Some of their arsenic tests ran higher than their leads, probably due to some growers' non-lead spray program. Fruit sprayed with Manganar apparently is giving extreme difficulty in cleaning in some instances.

"Reviewing recent analyses of the Wenatchee Industrial Laboratory we find nearly all samples running below the tolerance, but with a great range. Many samples go down to .002 or lower on lead with a goodly proportion below .01, while others are right up around the .02 limit. The Wenatchee Laboratory is now using the electorlytic method of lead determination."

D. H. Rose and J. M. Lutz contribute a paper on "Injury to Pears Caused by Paper Liners Impregnated with Sodium Silicate," to the August 1 issue of the Journal of Agricultural Research. They find that alkaline substances contained in sodium silicates apparently are the direct cause of brown discoloration of russeted varieties of pears.

ADMINISTRATIVE NOTES

How to Remember--and Never Forget. One of my friends who is adding gray hairs to his head constantly through worrying over the possibility that he may fail to send in his pay roll on the proper date, or certify employees promptly for salary payments, wants to know what sort of memory aids I used in that connection in the days when I actually had to work instead of merely editing a NEWS LETTER. He doesn't understand, you see, that editing an office NEWS LETTER is a reward, a privilege--and you merely do it in addition to your regular work.

But about memory aids: The simplest so far as I know is the ordinary desk calendar. If you note on the page for December 21, say, that some particular thing must be done that day, you will be reminded of it in proper time--unless you forget to turn over the pages from day to day. One man I know adopted the plan and then usually forgot to turn the leaves of the calendar! The difficulty was solved by having the messenger do it each morning.

A plan very generally used employs 3x5 guides for each of the 12 months and for the days (1-31) of the month. You place behind the monthly guides notes (preferably on 3x5 slips) of things to be attended to during that month. On December 1, say, you take all the notes behind the December guide and distribute them behind the 1-31 guides, according to the dates on which the matters should receive attention. Thus each day you find behind the guide card for the date, the notes to remind you of the need for certifying salaries, sending in pay rolls, etc. that day.

One field station superintendent uses file folders instead of guide cards. He has a folder for each month (the red nearleather sort which expands and holds much more than the ordinary folder) and one for each of the days (ordinary manila folders) nos. 1-31. On the first of the month (October 1, say) he takes all the papers out of the October folder and distributes them in the 1-31 folders according to the dates on which they demand attention. So, each morning when he comes to work he knows that in the folder of that date are all the papers (or references to them) demanding his attention that day. Unfinished business at the end of the day is placed in the folder for the following date.

Placing unfinished matters in the numbered folder for the following day when you leave your office does not necessarily mean, of course, that you actually place in the folder the papers, etc. that are pending. All you need is a reminder of them. The originals may be placed in the general files available to other workers of the office. It simply means that you (or some one taking your place in case of your illness or absence) know that in the daily (1-31) folder you have references to all the things awaiting attention that day.

ADMINISTRATIVE NOTES

Of course, the matters to be attended to during the day are taken out of the folder, as a rule, and kept on the desk until finished with or postponed. New matter coming in receives immediate attention where needed or a note is made for future attention and placed in the proper folder and the papers sent to the files in the regular manner.

If, for example, you receive a request for plant material which cannot be filled until March 15, 1934, you merely acknowledge the letter and send the papers to the files, placing an extra carbon in the March folder. On March 1, when the papers in the March folder are distributed you place this reminder in No. 15 folder for attention of March 15. The original papers, you see, need not be kept out of the files.

As evidence that I take my own medicine, I might point out that if I get material which seems to be suited for the January 15 NEWS LETTER I place it in the January folder. On January 1, when I distribute the contents of the January folder among the Numbered 1-31 folders, I put this--not in the No. 15, but in the No. 9 folder. This is because material for the January 15th issue must be in the mimeographing section about a week before it is due to be mailed out, to give time for mimeographing, checking, stapling, etc.

With this "Pending File," as it is sometimes called, work for an entire year may be taken care of and should you die or resign, you will know that your successor will be able to take up the folders in their regular order and find out just the things you have planned or promised. The real value of the file is in the satisfaction it gives to be able to take out the October 2 folder, for example, spread its contents on your desk, and know that you have before you all of the matters demanding your attention up to that time--all "hangovers" are listed briefly even if the original papers are back in the files or elsewhere--the memo tells where they are, of course, if such information is essential.

In addition to taking care of things in the event of your sudden death or dismissal, this file may help you in a personal way--especially if you happen to be a married man. Think what a relief it will be, for example, to take out the October folder and find in it a reminder that October 11 is your wedding anniversary date, thus enabling you to purchase the little gift you would surely have failed to remember to get--with distressing consequences. In this way you may build up a reputation for efficiency in remembering birthdays, anniversaries, etc. which will be worth a lot more to you in life, liberty and the pursuit of happiness, than any reputation for official efficiency.

ADMINISTRATIVE NOTES

Air Mail Doctor Stockberger, director of personnel and business administration, offers the suggestion that we use air mail for the transmission of all communications on which the greatest possible amount of speed is not needed. The penalty (franking) privileges does not extend to air mail, of course, but by paying the air mail rate of eight cents and, when desirable, ten cents for special delivery, we can insure the speediest transportation and delivery of a letter--at a much lower cost than either telegraph or telephone. For example, we can insure delivery in San Francisco at 11:55 a.m. or Portland, Ore. at 12:00 noon, of letters air mailed from Washington at 3:20 pm. the day before. Thus, air mail is often as speedy as night telegrams and almost always cuts by well more than half the difference between telegraph and ordinary mail.

"Since air mail is much less expensive than the telegraph, it offers a wide field for economy," says Doctor Stockberger in P.B.A. Cir.241. "Administrative officers responsible for the selection of the transmittal medium should equip themselves with the air schedules from their cities and arrange to receive supplements. Air mail should always be considered as an alternative to the night telegram, and should be carefully considered in the cases where the utmost expedition is not strictly required."

Of course, when claiming reimbursement for air mail postage it will be necessary to furnish an explanation as to the official necessity for it.

"OF THE GROWTH AND PRODUCTION OF THE UNITED STATES!"

There is an ancient proverb which assures us that charity begins at home, and another equally famous expression to the effect that self-preservation is the first law of Nature. I hope that the latter, in particular, has been duly impressed upon one of the country's larger manufacturers of candy.

This manufacturer has been emphasizing in his popular magazine advertising recently the fact that his concern goes to all corners of the world to purchase materials for use in his products. The implication that he could not find American products of sufficiently high quality to meet his needs, aroused the ire of one of our field employees, and he wrote the manufacturer a letter, copy of which has fallen into my hands.

"May I venture," he writes, "to suggest the following change in your advertisement? For the words, 'The whole world gives its best for_____ chocolates, we go to far-off lands...," substitute the following: It is our boast that not a single raw material going into the manufacture of our candies is being purchased in the United States. We are doing our part to promote prosperity in these various countries we import our raw materials from, and doing nothing whatever to help American producers of HONEY, ALMONDS, CHERRIES, PISTACHE NUTS, DATES, SUGAR, and, last but not least, WALNUTS. Therefore we feel that we are entitled to ask for the patronage of the American people."

Vol. 5, No. 19 October 1, 1933

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.

John A. Ferrall, Editor

This NEWS LETTER is for distribution only to employees of the Division, and the material contained in it is of an informal and confidential nature and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official or final word on the subjects.

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Controlling Date Ripening. American date growers will benefit greatly by the discovery of cost-free control of time of ripening of dates through the use of special pollen, declares Dr. Walter T. Swingle. The investigations under his charge have brought about the successful establishment of date growing on a commercial scale in this country, and he is now discussing one of the latest and most important discoveries in connection with this work-- the influence of pollen on the time of ripening and character of the fruit.

"Among the scores of palms planted for ornament in southern Florida and California is a species growing as a clump of slender stems curving up from a single root," he writes. "At the top is a tuft of graceful, feather foliage. This graceful plant is the wild date palm of tropical Africa, known to botanists as Phoenix reclinata. It produces small bunches of tiny dates with almost no pulp and even that inedible. Until two or three years ago nothing seemed further removed from commercial date growing than this graceful wild relative of the date palm found only in the city parks and in dooryard plantings.

"Some years ago we found that the kind of pollen used on the flower bunches (all date palms are artificially pollinated) had an effect on the time of ripening of the fruit. Pollen from different individual male palms is found to exert year after year the same effect, and in some cases a very decided effect, on the time of ripening of the fruit. About nine-tenths of the dates grown in the United States are of the Deglet Noor variety, at present grown almost entirely in the Coachella Valley in southern California. This variety, which produces the finest dates that reach the European markets, is native in the Sahara Desert in southern Algeria.

"The American date growers have had spectacular success with date palms. They have, in many ways, surpassed the Arab date growers of the Old World, and get much higher yields of Deglet Noor dates than the latter do. Unfortunately, in the climate of the Coachella Valley a fairly large proportion, varying from one-tenth to one-third of the crop of this variety, ripens during the hot weather of late summer and early autumn. These early dates are difficult to sell on markets already overstocked with fresh fruits of all kinds; yet they must be sold promptly, if at all, as they are poorly adapted to long-time storage. No male of the true date palm has yet been discovered which produces pollen able to postpone the ripening of this variety enough to prevent much of the crop from ripening during hot weather.

"At this point enters the graceful little palm from tropical Africa. Pollen of this wild relative of the datepalm has been found for three successive years to cause greatly delayed ripening of the Deglet Noor variety. This African wild date palm produces abundant pollen at about the right season for pollinating the true date palm. When a male palm of this species is found that produces pollen which postpones the ripening of the Deglet Noor variety the right length of time, such an individual can be propagated rapidly by offshoots, which are produced freely at the base of the stem.

"Here is Cinderella's brother come to light. One of the least promising for fruit producing of the dozen or more species of wild date palms turns out to be vitally important to American date growers, who already have several million dollars invested in date plantings. Dates of the Deglet Noor variety that ripen after the hot weather has passed are of good texture, high flavor, cure easily and can be kept for long periods in cold storage without deterioration. Best of all, it costs no more to use one kind of pollen than another when the flower clusters open in spring.

"Thanks to our discovery of the possibility of insuring the ripening of the crop at the proper season through the use of pollen of the African wild date palm, the Deglet Noor date is undoubtedly destined to become still more popular on the American table than it is now."

The culture of the date palm, it has been pointed out, is unique in many respects as compared with ordinary fruit crops. Not the least picturesque of the operations involved in date growing is the need for artificial pollination, made necessary by the dioecious nature of Phoenix dactylifera and the impracticability under commercial conditions of resorting to the natural method of wind pollination. Thus the direct influence of any particular type of pollen is of immense practical importance to the date grower, for if available it is just as easy to use one pollen as another.

FRUIT DISEASES

J. R. Cole, Pecan Disease Field Laboratory, Shreveport, La.

"The pear tree that I reported as losing its foliage, in my weekly report of August 26, is apparently dead, since all of its leaves have been shed and there is no sign of new growth," he writes September 30. "The pecan trees that stood in water for 30 days are in an apparently healthy condition, no sign of scorch and the nuts are maturing nicely."

Earlier in the month he reported: "On the 7th, A. O. Alban of the Bureau of Chemistry and Soils, and I left for points in Texas where we have rosette experiments in progress and where the growers are applying zinc sulfate to rosetted trees. Out first stop was at the Evers orchard at Denton. Here the trees received a soil application of 5 and 10 pounds of zinc sulfate last March on a soil with a ph. of 6.50. Evers sprayed most of the soil treated trees but left enough for us to get our records. There was some improvement with both rates of applications, but most where the 10-lb. rate was applied. The trees are about 12 inches in circumference. An adjoining block of trees sprayed three times with 1-50 zinc sulfate, the 1st application having been made the latter part of April and the last the 1st of August, have completely recovered from rosette.

"From Denton we drove to Arlington and were met by C. L. Smith from Austin, and he accompanied us on the remainder of the trip. Friday morning we visited the Oscar Gray nursery near Arlington and saw some severely rosetted nursery trees, also trees that had been sprayed with one application of Bordeaux mixture (4-4-50) for nursery blight, Phyllosticta caryae, with beneficial results. Mr. Gray is carrying on some very interesting experiments with rootstock selections. We visited one orchard and observed a tree, probably 50-75 years old, that has been rosetting severely in the past, but was given an injection of zinc salts last winter. The dosage was not measured but it was reported to be heavy. The tree has practically recovered from rosette and the wounds are healing nicely.

"From Arlington we drove to Brownwood, stopping at the Ross Wolfe nursery and orchard enroute. This is located at Stephenville. The owner has a considerable amount of rosette and treated some of his trees with zinc sulfate, making soil applications of 10 and 15 lbs. per tree. Trees receiving both applications show improvement, the most being on the heavier applications. The soil in this orchard is slightly acid. Liver Spot, Gnomonia caryae, var. Pecanae, is causing premature defoliation in this orchard....

"The next orchards visited by us were at Georgetown. Here rosette is so severe that last year the growers were planning to pull their trees out if zinc did not overcome the rosette. Three applications of spray

FRUIT DISEASES

J. R. Cole (continued)

prevented rosette and five pounds of zinc applied to the soil around trees 8-10 inches in circumference slightly improved the trees. At present our data indicates that spraying with zinc sulfate is the best method of overcoming or preventing rosette in Central and West Texas. The spray can be used with safety at the 2-50 rate. It can also be combined with arsenical sprays when the grower is spraying for nut casebearer and it has promise of controlling parasitic diseases.

"We returned to Shreveport Thursday, September 14th."

G. A. Heckstroth, Chadbourn Laboratory.

Report of September 23: "On September 6, a very heavy rain fell at Chadbourne; 4.20 inches fell between 8 a.m. and 5 p.m., and 1.49 inches after that, making a total of 5.69 for the day.

"Very few strawberry plants have been set out in this section so far. There is sufficient moisture in the soil, but the growers believe that very few plants would survive on account of the unusually warm weather. They are all waiting for cooler weather, but they are anxious to get their plants started as soon as possible. The majority of the plants that were set out by the growers this summer have died. Several times when a good rain fell the growers did some replanting of old fields, but most of this work will need to be done over again.

"Some fields are becoming rather spotty as a result of the dwarf disease; fields now show stretches of a few feet up to three or four yards where most of the plants show symtoms of the disease. Ten days ago these fields were rather even in appearance."

John C. Dunegan, Fayetteville, Ark.

"I devoted most of the week to the examination of representative samples of apple leaves from various orchards for leaf spot data, and to the examination of fruit of the Stayman variety in our experimental plots," he writes on September 30.

"The harvest of the Stayman was completed and, while I have not worked up the data with reference to disease control, the excellent finish on the fruit sprayed with the new copper compounds was very evident in the course of the harvest work."

FRUIT DISEASES

Howard E. Parson, Spring Hill, Ala.

Speaking of visit to a Magnolia Springs, Ala. pecan orchard, he says, under date of September 16: "In spraying with Bordeaux mixture against scab black aphids have caused a good deal of trouble. Also on Success there is a trouble showing up now that has appeared about this time for several years. Eight per cent of the nuts on Success are attacked with something that causes the hull to turn brown, shrivel, and open prematurely. If the nut stays on until harvest it is light. Trees that have been sprayed four times for scab also have the trouble, indicating that Bordeaux mixtures will not control it. The disease has been prevalent here at Spring Hill previous years, but none can be found this year on nuts free enough from scab to discern it."

H. E. Stevens, Orlando, Fla.

"The storm of September 3-4 caused no damages in the Miami section," he reports on September 14, "and I found our avocado experiments in very good shape. We got some very striking results on fruit spot control of Waldins and Winslowsons. We had a sufficient amount of injury on the check plots this season to show a good comparison between sprayed and unsprayed plots, the effectiveness of the different number of applications and the effectiveness as to time of the application. Mr. Steffani, the county agent, was very much impressed with the results obtained and he had a field meeting of a number of avocado growers of Dade county. There were probably forty or fifty present and we all went over the plots together, comparing the results and I explained the various treatments that were given. Our spraying this year was a very good showing of what can be done in the way of controlling fruit spots on avocados.

"Going down the East Coast to Miami I did not see much in the way of serious damage until I got below Cocoa, where considerable grapefruit was noticed on the ground. The Fort Pierce-Stuart region possibly suffered most....The storm swept through Polk County and as that is our heaviest citrus producing section the loss is apt to be pretty high. I also believe there will be considerable damage from sun scald which will add to the total loss and it will probably be some weeks before they will have an accurate idea of what the loss will be. Apparently Dade and Lee counties and the narrow fringe along the west coast to Sarasota, have escaped without any storm injury; perhaps the major portion of Lake County, part of Orange, Volusia and the north tier escaped with little or no damage. No doubt there will be considerable loss from blue mold and fruit rots following the storm, especially if the weather conditions are favorable. We had terrific rains in most of the area covered by the storm and the country has been flooded for several days."

FRUIT DISEASES

R. B. Wilcox, Pemberton, N.J.

Writing from Pemberton on September 23d, he gives an interesting report on cranberry conditions in New Jersey. We had an unusual opportunity this year, as a result of the storm beginning August 20th, to observe the remarkable tolerance of unpicked cranberry fruit to flooding," he writes. "The gale of August 23d, which was so disastrous to orchards, did practically no damage to cranberries. Precipitation during the entire storm varied from 5 to more than 10 inches over the cranberry area, being heaviest near the coast."

"Most drainage systems were inadequate to carry off the drainage systems were inadequate to carry off the water as fast as it fell, and hundreds of acres of cranberries were completely submerged for periods up to 4 or 5 days, and a few bogs or parts of bogs were under water more than a week. Fruit of the Early Black variety was well sized and more or less colored, while Howes berries were green or white.

"We had taken fruit samples on a number of bogs on August 15th for incubator tests of keeping quality. We collect a random sample, remove defective berries, and place the sound fruit in the incubator for one week. We started a second lot of samples on September 2, after the storm. At this time we found in the field a few 'water-logged' berries, apparently damaged by submergence, but the number did not much exceed 2 per cent on either Blacks or Howes, and on most bogs was negligible. On no variety did the amount of rot which developed on apparently sound fruit in the incubator increase significantly over the earlier test, even where the vines had been under water for five days. There is a feeling among the growers that Early Blacks were considerably injured by the flooding, and many berries are being rushed to the canning factories as soon as picked. This idea may possibly be correct, but was not indicated by either our tests or our field observations.

"We have examined a number of bogs where we did not take samples for test. Considerable early rot had appeared, especially on native Jerseys, before the storm. Some bogs or spots were the rot had been fairly heavy was almost completely rotten after long submergence; the flooding appears to have aggravated or hastened the rotting of 'weak' berries in the field. We also found a few bogs where 'water-logged' berries exceeded the percentage given above. But in general the flood seems to have done a surprisingly small amount of damage to cranberry fruit. Whether the newly forming fruit buds for next year were injured is another question."

THE GRADUATE SCHOOL

Dr. A. F. Woods, Director of Scientific Work and Chairman of the Graduate School, has announced a course in plant anatomy (year) by Dr. Ernst Artschwager. This course, designed to give a working acquaintance with the internal structure of vascular plants, and with emphasis placed on practice in interpretation and determination of material, held its first session on Saturday, October 7, in Room 401, West Wing.

FRUIT DISEASES

H. F. Bergman, Cranberry Disease Field Laboratory, East Wareham, Mass.

Writing under date of October 1, he says: "Rain has continued with few interruptions during the week. This has delayed harvesting of berries and caused considerable loss by rotting. Some of the berries on our check spray plots yesterday were about three-fourths rotten but this is, of course, a very unusual condition. This has been the wettest September for many years.

On September 23, he reported: "The first berries from our experimental spray plots were picked this week, but only the Early Blacks from two bogs. Samples from each plot on both bogs were examined for rot. Berries from a bog near Assonet ran from 33.0 to 56.0 per cent rotten on check plots. The results of this year are entirely different from those of last year in that three sprayings seem to be no more effective in controlling rot than two sprayings. In some instances, it appears as if one application had controlled rot as effectively as two or three applications. When not occupied with our spraying experiments, we have been collecting material for cooper analysis and preparing it for later use."

Paul W. Miller, Corvallis, Ore.

"During the week ending September 9, a trip was made by the writer to Lewis County, Washington, to take results of investigations on the brown-stain disorder of filberts. In this study attempts were made to produce the trouble by various cultural practices. One plot of Barcelona trees received practically no cultivation during the season; a second plot received frequent cultivations during the summer; and a third plot received only a limited number of cultivations. Counts made in each of the above plots revealed less than 1 per cent of affected nuts in all plots. These results seemingly indicate that this disorder is not associated with cultural practices of the several different sorts used.

"A survey of the prevalence of the bacterial blight disease of filberts was also made during this trip in a number of filbert orchards. This disease was found to be prevalent in practically all orchards visited. Even eight-year-old trees which, under ordinary conditions, do not seem to be subject to further trouble from bacterial blight, were found infected in some orchards. Thus, in an eight-year-old Barcelona planting near Silver Creek, Washington, dead areas were found about old blight cankers which had been removed several years ago and shich, up to the present season, were seemingly healing over. It would appear from observations made that the tissues about the old cankers had been reinfected with bacterial blight. In some cases, it is suspected that winter injury of the tissues occurred during last winter which allowed the bacteria to gain access to tissues which would normally have resisted infection, due to their maturity."

FRUIT DISEASES

Leslie Pierce, Vincennes, Ind.

"Practically all of the Jonathans and about 60 per cent of the Grimes had been harvested by the end of the week," he reports on September 16th. "On account of injury caused by dry weather and leafhoppers a great deal of the fruit of both varieties dropped before it could be picked. The apple market as far as it applies to fruit from this section is completely demoralized. Practically none of the fall apples picked up to this time have been sold. The No. 1 and No. 2 grades are being placed in cold storage and the lower grades are being held in common storage. The growers are hoping that cooler weather will create a demand for the cooking grades of Jonathan and Grimes.

"A great deal of late scab infection has recently developed on the foliage of terminal growth on Johathan, Delicious, Winesap and Turley. The under surfaces of many of the leaves are almost completely covered with scab. The infection probably took place during a cool, showery period occurring September 2-4. Defoliation in the tops of apple trees from late spring scab infection has grown decidedly worse during the past week. Several varieties in a number of orchards have lost up to 90 per cent of their leaves from the top one-third of the trees. This would seem to indicate that either the tops were poorly sprayed or that more of the spray material was washed off from that portion of the trees by the heavy rains the latter part of last May. It now seems evident that the over-wintering source of scab infection will be just as abundant next spring as it was in the spring of 1933."

"Our success with Purkoff wheat as a cover crop in the Purdue-Vincinnes peach orchard last season will result in a number of the growers giving it a trial this fall," he wrote on September 2. "To repeat a statement made last spring, the Purkoff variety of wheat is as resistant to winter injury as rye, prevents erosion much better because it roots deeper and stools out more than rye, and is from two to three weeks later in heading out in the spring. When sown for a cover crop, this variety of wheat should be in the ground by September 15th."

FRUIT AND VEGETABLE HANDLING TRANSPORTATION AND STORAGE INVESTIGATIONS/

"The Commercial Storage of Fruits, Vegetables, and Florists' Stocks," has been issued as Department Circular No. 278, and is now being distributed. It was prepared by Dean H. Rose, R. C. Wright and T. M. Whiteman of this Division, and presents a series of brief summaries of the essential average storage requirements of most of the more important varieties of fresh fruits, vegetables, cut flowers, and certain other perishable commodities which enter the market on a commercial scale. The circular is of especial interest and importance as this is the first time that authoritative information of this character has been assembled for publication.

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

Edwin Smith, Wenatchee, Wash.

"This week marked the picking of Anjou and Comice pears by Dr. Gerhardt and Mr. Ezell," he writes September 23. "A main picking such as this is a very busy time in the laboratory and storage on account of delayed storage, CO_2 gas treatment, sampling for chemical analyses, acid determinations and enzyme studies. On top of this they had a respiration run on Jonathans put up for soft scald studies.

"Mr. Carter of the Bureau of Chemistry arrived in Wenatchee on September 20. He expects to devote his time to flourine determinations. Mr. Gross is expected presently to handle leads and arsenics.

"The Wenatchee Industrial Laboratory is equipped to handle 350 lead and arsenic determinations daily, though they have not reached this mark yet. Their Cashmere branch has been handling as high as 70. Cleaning is progressing satisfactorily though obstinate residues are appearing on some crops, especially where manganese arsenate was used as a non-lead spray throughout the season or in the second brood sprays.

"The new double process Cutler-Moe machine installed by the Fruit Growers Service Company this week has been giving gratifying results. In it they clean their most obstinate lots well below tolerance. In size this machine takes on the appearance of a paper-mill, being 35 feet from feed to sorter's table.

"Packers are in the midst of the Jonathan harvest and this week has witnessed the first shipments of Delicious. Considering the general lateness of the season we regard operations as being very advanced... Cloudy weather with bright periods prevail. This has resulted in the third week of cool September weather. This has been fortunate from the standpoint of color and late worm injury. Loss from worm injury is severe enough as it is."

H. C. Diehl, Seattle, Wash.

"At Chehalis, frozen peas were discussed with the officials of the National Fruit Canning Company," he writes on September 30. "Comparative examination was made of packs of different varieties. Perfection peas, although preserving well at 0° F. certainly do not have the color, which is characteristic of the Telephone types. This company has leaned heavily on us for advice during the pea packing season and the manager, Mr. William McCaffray, who was present also at Chehalis (the main office is in West Seattle) expressed himself as much gratified with the contact with the Laboratory. We discussed also ethylene coloring and storage of tomatoes, which my tomato storage experiments of 1921-22 enabled me to give some experimental results and suggestions."

FRUIT AND NUT PRODUCTION

Geo. P. Hoffmann, Pecan Field Station, Meridian, Miss.

"With the assistance of Dr. H. L. Crane and Mr. J. B. Demaree, a very thorough examination of the pecan plantings on the station grounds was made to determine the effect of the paraffin treatment," he writes on September 30th. "There is conclusive evidence of the trees in this planting having been seriously damaged as a result of the paraffin coating. A special report in much detail and jointly made, has been submitted to the Washington office."

On September 23rd he reported: "The main planting of Crotalaria Spectabilis made between May 1 and 15 shows remarkable and satisfactory growth. This planting now offers promise of normal seed development and ripening. Consequently, an area of between 2-1/2 and 3 acres is being left unturned with the idea of saving the seed. An early strain planted on July 5, is in full flower at this time and appears to be about two weeks ahead of plantings made at the same time (July 5) from seed of this regular strain. Plantings made on July 5, have resulted in a good stand and satisfactory ground coverage--in the case of both the early and regular strains--and have attained an average height of 12 to 16 inches.

"Of the several varieties of strawberries growing in the variety planting, the Blakemore is by far the most vigorous and seems to be attracting attention of growers.

"Because of unfavorable weather conditions, resulting in very dry and hard soil, it was necessary to use mules in the turning of a good ares in the groves. In this area we have saved, with the purpose of reseeding, a strip of crotalaria in the tree row. Under the unfavorable conditions for the turning of soil and the very heavy cover crop, it was interesting to find that a good fast pair of mules drawing an 8-inch "Black Land" plow covered about 3/4 as much ground per day as did the tractor with a two-disc plow. The cost of the team, plow and driver, was approximately one-half that of operating the tractor where normal wear and tear operating cost is charged."

September 16: "In various sections of the grove a square 10x10 feet of cover crop representing the average, was cut and the green weight taken. The cover crop from this area will be again weighed when dry, for the purpose of determining the air dried weight. Soil samples were drawn in duplicate at depths of six and twelve inches, respectively."

FRUIT AND NUT PRODUCTION

C. E. Schuster, Corvallis, Ore.

"Near Eugene, a chestnut planting was visited this week which shows a considerable loss due to a lack of union between the stock and the scion," he writes for the week ending September 16, "and then apparently winter injury in other cases. This is the second planting that has shown losses from lack of affinity between the root and stock."

"With the losses that have occurred in the chestnut plantings this winter, along with the difficulty of developing good unions, considerable investigation is going to be necessary in the chestnut line if chestnuts are developed here. One planting has suffered a loss of 30 per cent even where replanted up to two years ago. Another planting is practically eliminated at the age of six years. A younger planting at that same place is now starting to die out."

On September 9th he had written: "This week has been occupied in a trip visiting the orchards in the State of Washington. It is noticeable that a decided improvement has taken place in these orchards in the last three years. The first time we saw many of these orchards they were suffering considerably from winter injury, blight, or a combination of the two. In the main the orchards have recovered and are making good growth."

Charles L. Smith, Austin, Tex. (Texas Pecans)

"During the latter part of last week and the first part of this, a check-up of rosette experiments was made with Dr. Alben and Mr. Cole of the Shreveport Station," says the report of September 16. "Favorable results were obtained in all cases where zinc sulphate was applied as a spray and where it was injected into tree trunks. The soil treatments showed improvement in some cases.

"In some orchards where two or more sprays were applied, the rosette has practically disappeared, even on trees very badly affected. There is a lot of nut case-bearer damage showing up in most orchards visited, and shuck worms are numerous in many orchards. In orchards where zinc sulphate was applied as a spray there is a marked difference in the condition of the foliage, the sprayed foliage being much more free from foliage diseases than unsprayed trees. In orchards where arsenical sprays were used for nut case-bearer control, it was generally found that black aphids had been rather numerous following the spraying."

FRUIT AND NUT PRODUCTION

C. P. Harley, Wenatchee, Wash.

Report of September 15: "This week starts the taking of records from our cork spot investigations on Anjou pears. At the Dougherty Ranch the fruit was picked somewhat immature and possibly we are not getting our maximum cork development. It will be sufficient, though, to give us reliable information as to the response of the tree to differences in soil moisture and pruning practices.

"At our other plots on the Bainard Ranch at Malaga, the reverse is true. Here the fruit was well matured and heavily corked. Mr. Bainard was unable to pick the fruit as he was drawn on the jury and had been serving almost every day, so it was up to us to pick and check the entire crop from the 59 trees in our experiment. Fortunately, the trees were not large. We are unable to determine at this time whether any of the cultural practices are going to have sufficient influence on cork spot development for any recommendations. At the Bainard Ranch we were comparing the influence of heavy and light dormant pruning, variations in soil moisture, cover crop and clean cultivation, and summer pruning.

"The Jonathan harvest is in full swing. This is probably due to change in requirements for the Extra Fancy grade which now demands only 50 per cent color. Also, I think the growers are beginning to realize the necessity of picking their Jonathans earlier than has been the practice in past years. Our weather conditions have been ideal for color development, with bright sunny days and cool nights."

Elmer Snyder, Fresno, Calif.

"In order to maintain the more important vinifera grape varieties which have been tested by the Department in the California Experiment Vineyards, 225 varieties were budded on Rupestris St. George stocks which had been planted at the Oakville Station for this purpose. These stock vines budded to the vinifera varieties will be dug during the dormant season and planted at the Fresno plot in a permanent varietal collection plot for further study, breeding work, and as a source of cuttings for experimental stations and private individuals interested in testing grape varieties in various localities where these varieties have not been tried.....A shipment of six additional grape varieties was made for exhibit at the Century of Progress Exposition. A report was received on previous shipments stating that they arrived in fine condition and were attracting wide attention from the many visitors at the exhibits. Several photographs have been taken of the grape displays, and may be printed in the California Grape Grower, which reaches nearly all grape growers in California, as well as growers of grapes in the various foreign countries."

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

In a report dated September 30, received from Mr. Edwin Smith at Wenatchee, Wash. just as the NEWS LETTER is being mimeographed, he states that "As the season advances, records of the Wenatchee Industrial Laboratory show more samples which do not meet tolerance. Some packers have had good results with sodium silicate, others have not and have had to switch to HCl. We believe many more packers are now using HCl than anticipated doing so at the beginning of the season. Many packers using sodium silicate are adding 2 quarts of kerosene to 100 gallons, with additional amounts to compensate for volitization. Soap is then added to cause the solution to foam.

"In order to meet tolerances, temperatures have been higher than in previous years; 110° is not uncommon for HCl, 120° for sodium silicate. Growers have brought in Jonathans badly checked when washed for 2 minutes with HCl plus Vatsol at 90° (their statement of temperature). We have observed slight checking of Delicious in sodium silicate at 110°; McIntosh crack excessively at this temperature. Thus the old danger points of heat prevail.

"Sharp frosts occurred in Wenatchee on the nights of September 23, 24 and 30, with light frosts on some other nights. September ended, a month of cool weather with an unusually large number of cloudy days. Color of Delicious and Jonathans is exceptionally good. The apples are more firm than usual. At the higher altitudes sizes are small and our personal observations lead us to believe that Winesap sizes will be on the small side."

FRUIT AND NUT PRODUCTION

B. G. Sitton and J. L. Pelham, Shreveport and Robson, La.

"Wednesday and Thursday, Sitton and Alben made a trip to Lake Providence and other points, upon the request from Mr. J. E. Ransdell. The Ransdell orchard is in very bad condition due to a combination of factors. The Moneymaker trees have lost a large portion of their foliage, the primary cause probably being due to vein spot, although there had been much damage from Fall web worm and from the walnut caterpillar. The nuts are opening prematurely and are very poorly filled. The foliage was in such bad condition that it was difficult to determine just what was the cause of the shed; some of it may have been due to leaf scorch. A very similar condition was found on the Moneymaker variety in every orchard visited. It is very evident that more attention will have to be given to control of foliage diseases, especially in view of the serious decrease in set of nuts in the year following defoliateion."

TRUCK CROP DISEASES

Wm. D. Moore, Charleston, S.C.

"Weather conditions have improved somewhat in this section over that of last week," he writes under date of September 23rd. "The abnormal temperatures have dropped to normal for this section, thus giving the germinating plants in the firlds a chance to come through the ground. We have had no rain and in some instances cabbage is suffering from the hard crust that has formed at the surface of the soil. For the most part, however, everything is in excellent condition throughout this area.

"Beans have developed rapidly during the week, in fact, some of the plantings made after the recent storm have almost reached the same height as those that survived the rains. Considerable root rot is developed in some fields, particularly Pythium and Sclerotium rolfsii. The latter is causing some loss of plants but, so far, the former is confined to the lateral roots. It is as yet too early to make readings on foliage diseases."

HORTICULTURAL FIELD STATION, CHEYENNE, WYO.

"With prospects of delivery next week of pipe and materials for irrigation construction purchased through the Forest Service, Denver, 10 laborers were put to work on the 20th excavating for 24" pipe line from east side of Roundtop to an open ditch leading to our dam," says the report for the week ending September 23d. "Workmen of the city of Cheyenne are completing their water line ditch through the station, now working north of the north fork main drive to the base of Roundtop.

"H. E. Engstrom collected squawberry, mountain mahogany and other tree and plant material during the week at Pole Mountain. Dug two-year-old caragana and ash and one-year-old Chinese elm and box elder from the tree nursery for setting out next week in blocks in "date of planting" experiments. A. C. Hildreth and J. L. Emerson were in the Sierra Madre Mountains west of Laramie the first of the week, gathering tree and plant material, returning on the 20th."

POTATO INVESTIGATIONS

C. F. Clark, William Stuart and F. J. Stevenson, are the joint authors of the new circular describing two new varieties of potatoes, Katahdin and Chippewa, produced in connection with our plant-breeding program inaugurated to secure by hybridization and selection varieties of potatoes resistant to milk mosaic. The title of the Circular, issued as No. 276 in the Department's series, is "The Katahdin and Chippewa Potatoes," and it is now ready for distribution.

BIDS The Division of Purchases and Sales requires that the three paragraphs quoted below be incorporated into all invitations for bids. Failure to include any or all of them will make it necessary to secure new bids before action can be taken by the Washington office:

1. Bidder hereby warrants that all unmanufactured articles, materials and supplies offered herein have been mined or produced in the United States, and that all manufactured articles, materials, and supplies offered have been manufactured in the United States wholly from articles, materials, or supplies mined, produced, or manufactured, as the case may be, in the United States, except as stated below:

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2. Prices bid herein inlude any Federal tax heretofore imposed by the Congress which is applicable to the material on this bid. If any sales tax, processing tax, adjustment charge, or other taxes or charges are imposed or changed by the Congress after the date set for the opening of this bid and made applicable directly upon the production, manufacture or sale of the supplies covered by this bid, and are payable by the contractor on the articles or supplies herein contracted for, then the prices named in this bid will be increased or decreased accordingly, and any amount due the contractor as a result of such change will be charged to the Government and entered on vouchers (or invoices) as separate items.

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3. National Industrial Recovery Act.

(a) The contractor shall comply with all provisions of the applicable approved code of fair competition for the trade or industry or subdivision thereof concerned, or, if there be no approved code of fair competition for the trade or industry or subdivision thereof concerned then with the provisions of the President's Reemployment Agreement promulgated under authority of Section 4(a) of the "Act to encourage national industrial recovery, to foster fair competition, and to provide for the construction of certain useful public works, and for other purposes," approved June 16, 1933 (Public No. 67, 73d Congress), or any amendment thereof, without regard to whether the contractor is himself a party to such code or agreement.

Provided that where supplies are purchased that are not mined, produced, or manufactured in the United States, the special or general code of fair practice shall apply to that portion of the contract executed within the United States.

(b) If the contractor fails to comply with the foregoing provision, the Government may by written notice to the contractor terminate the contractor's right to proceed with the contract, and purchase in the open market the undelivered portion of the supplies covered by the contract, and the contractor and his sureties shall be liable to the Government for any excess cost occasioned the Government thereby.

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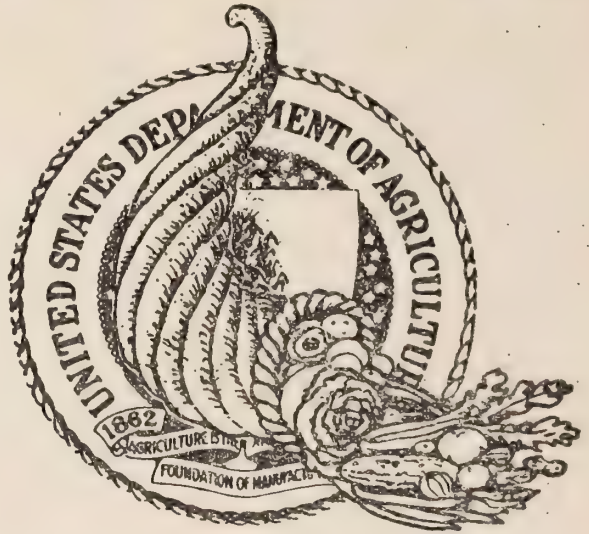
THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.

John A. Ferrall, Editor

This NEWS LETTER is for distribution only to employees of the Division, and the material contained in it is of an informal and confidential nature and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and are not necessarily the official or final word on the subjects.

Vol. V Washington, D.C., Noevmber 11, 1933 No. 21

Reporting Progress. A famous consulting engineer in management problems has outlined four points upon which he believes the expenditure of public funds should rest: Does the work need to be done? Is the person doing it the best available person? Is the best method of doing the work being used? Are the results satisfactory?

One might say, offhand, that if the fourth question can be answered in the affirmative, the work is justified, but there is considerably more to the proposition than that. The cost may be excessive, for example. I believe that not only the fourth, but the other three questions may be answered in the affirmative with regard to the work of the Division of Fruit and Vegetable Crops and Diseases.

Considering the vital place fruits and vegetables occupy in our agriculture, and our diet, there can be no question as to the desirability of the work. The results we are obtaining go a long way to prove that we are using the best obtainable personnel and methods. As to the cost, a conservative estimate places the returns to growers resulting from our work at $250,000,000 annually over and above what these growers would receive without our improved methods and varieties. These figures are based upon a very careful review by our project leaders of work during the past 20 years, a review undertaken last spring in connection with the elimination of less important research activities to meet reduced appropriations. The annual cost of all of the investigations conducted by the Division, based on average appropriations over the last few years, is about $1,000,000.

As an indication of the conservative manner in which these estimates were prepared, it may be mentioned that a preliminary survey of the vegetable production, standardization, and improvement studies indicated that growers are receiving an annual return of about $75,000,000 over and above former values, due to the disease elimination and quality improvement work of our specialists. In the final report the figure was set at $15,000,000. And so on.

It might be well to emphasize here that this is just what it claims to be, a report, and not an argument. It does not attempt to cover all of the work of the Division, but merely touches upon those items which have come to the attention of the NEWS LETTER during the year. It is especially concerned with lines of investigation whose results and significance appear not to have received the appreciation they deserve.

Investigations on fruit and vegetable growing are not new. They have been an essential part of the work on agriculture ever since the Federal Government inaugurated definite activities on behalf of the American farmer and orchardist. Some of the Department investigations in this field date back to 1862, and perhaps earlier. Gradually various sections and offices were formed to handle the wide range of research problems which arose with our growing population and agricultural extension.

In 1928, all of the investigations of the Bureau of Plant Industry dealing with fruits and vegetables--growing, handling, transportation, storage, utilization and diseases--were combined into the Division of Fruit and Vegetable Crops and Diseases (then known as the Division of Horticultural Crops and Diseases). Included in the new organization, too, was the work on nursery stocks, bulb culture, flowers and other ornamental plants and trees, and landscape gardening.

The scope of the Division's activities was clearly stated in an extemporaneous statement made by Doctor Taylor before one of the Congressional Committees last spring: "The Division handles substantially all of the work which the Department is doing upon the control of fruit and vegetable diseases, as well as production, transportation and storage problems of fruits and vegetables in the country. It covers not only the disease research work, but also the breeding work, the cultural practice work, the experimental studies of the behavior of these products when subjected to different temperature conditions in transit and in storage, the studies of handling practices and to a certain extent the utilization of the product, as by freezing and in other ways, through which these perishables are made available for merchandise."

Several months ago the yearly sales value of the various horticultural crops whose problems are being investigated by our staff was worked out from the 1929 "Crops and Markets" figures, and those of the 1930 census. The total is rather surprising--$2,100,000,000. In addition, the estimated value of the land, (exclusive of land used mostly for annual vegetable crops) buildings, and equipment, amounted to approximately $2,225,000,000. Thus, exclusive of the value of this high priced truck crop land, the value of the horticultural industry (land, greenhouses, and crops during any one year) approximately $4,325,000,000. This total includes the value of flowers, bulbs and ornamentals, but excludes such things as the avocado, date, mango, papaya, etc., for which statistics are not yet available. The total for manufactured fruit and vegetable products is about $700,000,000 a year.

Being in a way a super-service station for this four-billion-dollar industry, the Division naturally has problems in plenty. Its work is carried on by some 15 units, working on perhaps as many as 600 research problems. Many of these problems, of course, involve no separate or specific expenditures, being carried along in connection with work on the major projects. Some of the supposedly "minor" lines of research occasionally return amazing dividends. I have in mind one project, costing perhaps $7,000 a year. A suggestion on a single point of technique, based on the results of these investigations, enabled a producer to put up a satisfactory and marketable product after he had spent $60,000 unsuccessfully in trying to solve the problem for himself. Another producer lost $200,000 through engaging in the large-scale packing of varieties not adapted to that use. We could have prevented that loss; we are preventing similar losses every year.

Only recently, for example, we have completed tests of 56 varieties of peaches, revealing wide differences in their desirability for freezing in small consumer packages. Only 9 of the 56 varieties were given a rating of excellent; 8 rated as good. This is an indication of the possibilities of failure confronting the packer who lacks expert advice as to varieties, etc. To most of them a peach is merely a peach and the fact that one variety proves a success is taken to mean that any peach is adapted to this type of handling. Experience may be the best teacher, but her tuition fees are high.

It happens, too, that dividend returns are sometimes hard to estimate. In the crown-gall work, for example, probably the most important saving is to the orchardist and small fruit grower who are partially guarded as a result of our work from planting crown-gall-infested nursery stock with its resulting failures. But while it is almost impossible to put any figure on this saving, the value of the work may be surmised from the check we can make on it in connection with commercial nurseries. In apple propagation alone in three large nurseries of the Middle West the annual saving by the use of our recently developed control measures is about $6,000 a year for each nursery--this total, incidentally being almost exactly the cost of the crown-gall studies. The total saving by the control measures in all American nurseries is more than $100,000 a year.

While the Division is not primarily interested in increasing the total production, the ideal of making two blades of grass grow where but one grew before is still with us--in order that we may enable the grower to cut his acreage in half! As Secretary Wallace said in one of his radio talks: "I am not one to ask for less efficiency. I want more, and I know we can get more. But I want the efficiency to be controlled in such a way that it does more good than harm."

It is true that within the memory of men now living, students of economics were convinced that population increases would go beyond our power to produce food so that ultimately we would have more people than we could feed. There have been plenty of people who did not have enough food during these last few trying years, but the reason was not under-production. Agricultural research long ago pointed the way to cheaper and more abundant food production than our grandparents knew or would have believed possible. For some years now we have been concerned not with increasing total production but with the improvement of quality, the growing of better crops at less cost, the development of disease-resistant sorts, or varieties suited to parti-

cular conditions of soil and climate--and, of vital importance, getting the food products into the hands of the consumer in the best possible condition and at the lowest cost which will allow the grower a reasonable profit.

We have conducted this work in such close relationship with the State agricultural experiment stations and similar institutions, that we have been able to avoid duplication of effort.

It is true that there sometimes appears to be duplication of effort, but a little closer study shows that our interests are regional and do not take into account State lines; the State station in such cases will be found to have its eye on the local problem. Not infrequently work that we may be doing which appears to be a duplication of some station activity is in fact simply one link in a chain or a series of investigations, the results of which are far removed from anything even suggesting the duplication of work which State stations are doing.

Of course, many of the outstanding achievements of agricultural research would not have been possible if the Federal Government had not undertaken its work on the problems. It is the very effectiveness of the broad, regional and national campaigns we are able to handle, which led Sir Horace Plunkett, Ireland's great authority on agriculture, to declare that the United States Department of Agriculture "is the most useful institution on earth."

The flexibility of its work is what has convinced us that the Department is in a position to undertake the new job which modern conditions have placed before the worker for agricultural improvement--that of developing the machinery of social control. It is not the fault of agricultural research that we have had unused wheat on Nebraska farms and bread lines in our great cities at one and the same time. We simply have not up to the present learned to apply science to the development of social machinery, machinery that will regulate our economic system to the end that what we produce can be equitably divided. That has now become the new addition to the agricultural research program.

"Several times during the last few years, "writes Doctor Taylor in the Scientific Monthly for July, 1933, "the question has been asked, 'Why not discontinue work upon the control of plant diseases and allow the ravages of these diseases to at least partially solve the problem of over-production?' The losses from plant diseases unfortunately fall unequally upon the producing public. An epidemic will affect only certain irregular areas, causing heavy damage to individuals farming there, the curtailment in production temporarily benefiting other regions. From the standpoint of the Nation, such irregularity of production is objectionable because it not only injures or bankrupts certain groups of people but it increases the average cost of production for the entire country; it is not a cure for over-production. Plant disease epidemics at best can give only temporary benefit in reducing the total crop and generally result in national injury due to lowered efficiency of production, lowered quality of product, and eventually increased acreage of crops affected."

These critics are, in effect, asking us to apply the old method of "robbing Peter to pay Paul," and they overlook the fact, too, that a good bit of our disease-

prevention work is not in the field, but in connection with the handling and storage of the crops. The reports of the freight claim division of the American Railway Association, for example, show that between 9 and 11 million dollars are paid in claims on fresh fruits and vegetables each year--and fully 25 percent of this total is caused by disease and related troubles.

Doctor Taylor also points out that previous to the 1909 orange crop the losses sustained by the California orange growers from the rotting of oranges in transit ranged from 8 to 20 percent of the total shipment, and averaged 12 percent. The specialists of our Division pointed out to growers how careful handling could reduce these losses, and paved the way for a reduction of the losses to less than 2 percent. In addition to the actual increase in quantity of sound oranges delivered in the markets as a result of this work, the eating quality and therefore the unit value of the crop has been enormously increased by the improved methods of handling and more efficient refrigeration practice and equipment--and, believe it or not, the costs of handling have been reduced!

One of our most successful pieces of work in the disease-control campaign has been with sweetpotatoes, where losses have been reduced to about one third of those reported a few years ago; the prevention of losses of sweetpotatoes in storage is truly amazing. The marketing period of the crop has been extended from a few weeks to nine months of the year, insuring a steady supply of high quality sweetpotatoes at reasonable prices to the consumer, and at the same time preventing market gluts at harvest time to the immense financial benefit of the growers. It is estimated that this sweetpotato work is saving growers between four and five million dollars a year--more than four times the cost of the investigations of our entire Division!

Now and then, too, research not only helps but actually saves an industry from destruction.

During the hearings on the 1934 appropriation bill, Doctor Woods pointed out the following in connection with the work on sugar beets: The sugar beet industry of the Rocky Mountain and Pacific Slope regions with its investment of some $300,000,000 in factories and the growing of beets would in all probabilitity have been a total loss if the department had not succeeded in producing a satisfactory disease-resistant beet.

We have the word of the Imperial Valley lettuce growers that had it not been for Ivan Jagger's disease-resistant sorts the industry very likely would have perished. Some five years after his work was started the crop brought $10,000,000 in California and was worth probably $20,000,000 on the eastern markets.

The total farm value of yellows-resistant cabbage created by Dr. J. C. Walker and his associates reached about $1,000,000 last year; yet only a short time ago cabbage growers in certain States were faced with the alternative of drastically reducing their crop--or completely abandoning the industry because of the yellows disease. Kraut manufacturers in the same regions had the pleasant prospect of owning extensive plants and expensive equipment with no crop to handle--unless secured from a distance that was prohibitive, so far as profit was concerned. Our yellows-resistant varieties saved these industries.

For that matter, before the creation and introduction of the disease-resistant Marglobe tomato by our Division, the southern Florida tomato industry was doomed to financial ruin because of two serious diseases. Very soon after the introduction of the Marglobe, which is resistant to both diseases, practically the entire acreage of southern Florida, with large acreages in other parts of that and in other States were being planted to the Marglobe. The industry was not only saved from destruction, but placed on a solid basis. Since then, of course, we have added other wilt-resistant tomatoes to the Marglobe and now in certain Middle Atlantic areas where wilt is prevalent in important tomato growing regions, consistently higher yields of from 1 to 2 tons per acre have been recorded for these new sorts. Even at the low prices of recent years, this increased production means $10 to $20 an acre more for the grower than he received from the sorts formerly grown.

Celery mosaic and black heart are two diseases which have threatened to ruin the celery crop in certain sections of the country. In fact, at the time we inaugurated our disease-prevention work the annual losses in single localities from these diseases often ranged from $200,000 to $400,000 a year. Control methods already developed and put into wide practice are giving almost complete control of these diseases, meaning that we have gone a long way toward saving another industry from destruction.

In these and in other campaigns we have to bear in mind that eternal vigilance is the price of safety. It is that angle of the situation which makes continuing work necessary on most of the important crops. The development of yellows-resistant cabbage, mentioned above, will serve excellently as an illustration of the need for continuing work on a project in some instances even though the primary object has been attained.

In certain intensive cabbage growing sections, especially in the latitude of New Jersey and Maryland westward to southern Wisconsin, Iowa and Kansas, the cabbage yellows disease has been rapidly increasing in extent and seriousness. In bad seasons it may destroy 90 percent of the crop in individual fields and, indeed, is the limiting factor in success with cabbage as a field crop.

With a range and seriousness such as this, it can be appreciated that the securing of yellows-resistant varieties was a matter of great importance--and speed was essential. That Doctor Walker and his associates did create resistant sorts and did save the growers and kraut manufacturers from almost certain disaster is something of which we are quite proud. Of course, in the emergency anything that happened to show resistance to the disease and was of reasonably good quality was promptly rushed into commercial culture. This fact is what emphasizes the need for continuing the work. Now that the emergency is past, we are able to study and define needs more clearly, improve methods, and develop high commercial quality combined with yellows resistance. From a research standpoint, the preliminary work, important as it was, has merely given us a foundation upon which to build real progress in the creation of new and valuable varieties.

We haven't been overlooking that important member of the vegetable family, the potato, either. "The potato is the leading vegetable of the United States," points out Doctor Taylor in the Scientific Monthly. "More than a decade ago the so-called 'running out' of good varieties due to the potato diseases now referred to

as mosaic, leaf roll, spindle tuber and streak, had become the greatest handicap to potato growing and to crop improvement for producers throughout the country. These virus diseases, carried from year to year in the tubers of the diseased plants and more widely spread in the field by aphids or plant lice, had led to the belief that potato varieties were all subject to weakening or 'running out' after a few years' growth in a region and there was therefore a constant search for new varieties of potatoes and simultaneous discarding of some of the most important productive varieties.

"Our researches not only showed that the 'running out' was due to an obscure group of infectious diseases but also established the practicability of commercial elimination of these virus diseases from potato seed stocks and demonstrated the value to the grower of market potatoes of insisting upon seed potatoes known to be free of these diseases.

"From this work has come in several important potato growing States the supervision by State officers of potatoes grown for seed and the development of a widespread interest in the use of certified seed potatoes for market production. It is estimated that the potato growers of the country have been saved millions of dollars annually through the use of the almost completely disease-free certified seed potatoes." This piece of work alone--the part we have played in the development of certified seed potatoes--has actually returned to the American growers more than the cost of all our horticultural investigations.

It is work of this type which led a writer in Science to say: "The returns to the public in terms of percentage run to figures like 50,000 percent instead of the conventional 6 percent that bankers have popularized. True, the profits do not flow back into the United States Treasury directly as dollars. The profits are made not by Uncle Sam but by the American public. That is fitting, for the business of the Government is not to make money, but to undertake functions that benefit the whole people."

Another writer, in a prominent Florida agricultural paper, tells us that the investment of $35,000,000 in agricultural research in that State over a period of 27 years has been paying an annual dividend of $25,000,000 -- about 70 percent. This writer makes the mistake that the NEWS LETTER has sometimes made in comparing total cost of research with annual returns. To say that the investigations on fruits and vegetables are now returning to growers $250,000,000 a year more than would have been received using old methods and old varieties, is not exactly clear until we add that this is the annual return on a yearly investment, of research, of slightly more than $1,000,000.

This angle of the problem was brought up by A. D. Shamel in connection with the NEWS LETTER's comment that the California Citrograph was authority for the statement that citrus fruits topped the movies as a source of created wealth in southern California, the figures given being $103,000,000 for all citrus fruits, and $76,000,000 for the motion picture industry. The NEWS LETTER had mentioned these figures in connection with the total cost of the work of the Division for 50 years--about $15,000,000. Mr. Shamel points out that the value of the citrus industry over the period since the introduction of the Navel orange by the department, is about $750,000,000 and this is the total to be compared with to 50-year cost of the Division.

He states that from 1910 to 1932, inclusive, a period of 23 years, the total f.o.b. returns to the California-Washington Navel orange growers who shipped through the California Fruit Growers' Exchange, were $393,568,489. Applying this rate of return to the portion of the crop marketed by other agencies, brings the total to about $525,000,000 for the period. A rough estimate of the returns for the Washington Navel orange crop shipped from California previous to 1910 places the figure at $225,000,000--hence the grand total of $750,000,000.

California would probably have had an orange industry even without the Washington Navel, but the introduction of this variety certainly entitles the Department to a good bit of credit for the returns from the citrus fruit crop--and we have added to this credit through the bud selection work which has done so much to keep the industry serviced and in good running order.

Another leading agricultural paper, also on the Pacific Coast, has said: "In the very nature of things there can be no such a thing as a self-supporting State agency. It is just a question of whether an activity is supported by the taxpayers generally or by a special group of taxpayers."

This may be true of agricultural research in the sense that it turns no actual cash into the United States Treasury (aside from occasional sales of surplus products, etc.), but it is certainly not true in the general sense of the term self-supporting, for agricultural research pays for itself over and over again in added returns to growers. It thus supplies the grower with the money with which to pay his taxes, among other things.

This is true not only of our major activities, but of most of our less well known activities. The lowly peanut actually pays in annual dividends two and one-half times the cost of all of the investigations of our Division. Very little work has been done on this crop outside of our Division. In our conservative way, we have been rating the peanut as the basis of a $25,000,000-a-year industry. One of the larger growers and manufacturers places the total for peanuts and their byproducts at between $50,000,000 and $75,000,000 a year. At any rate, few crops in the South have shown such a remarkable expansion in the past thirty years. Our varietal adaptation studies have resulted in recommendations now generally followed by growers of peanuts. On the basis of a statement made by commercial interests in Georgia, from 100,000 to 150,000 acres of the Division's new peanut variety (Spanish 18-28) are being grown.

Just what this new variety means is indicated by the fact that these peanuts return to growers from $1.00 to $3.00 more an acre than the sorts formerly grown--and still generally used, for that matter. This represents a present increased annual return to growers in this region alone of something like $300,000 a year, a total that will increase as the new variety replaces the older sorts.

A conservative estimate of the present annual value of the peanut varieties developed and released in connection with our work--the annual value over and above that of the standard sorts formerly grown, that is--puts the total at $2,500,000.

A number of publications have been given wide distribution in the peanut growing regions, reporting on the studies of cultural methods, and making important recommendations as to the time and rate of planting, methods of field management, storage and handling of seed, and even upon such things as the preparation and preservation of peanut butter. In fact, a new process for the preservation of peanut butter has been developed and protected by a public service patent.

Such a patent, incidentally, means that some improved method or discovery has been placed at the disposal of the general public without charge. In this connection, we have recently declared an extra dividend in giving to the public Patent No. 1,920,540, issued to J. R. Winston, R. C. Wright and J. F. Wootten of our Division. This covers improved methods for coloring citrus fruits, and in particular the "trickle" method upon the perfecting of which Mr. Winston has been engaged for the past several years. Studies along collateral lines by Messrs. Wright and Wootten contributed to the development of the method, and this has been recognized in the joint patent.

The "trickle" method gives a richer and more uniform color in a shorter length of time than the old methods. In addition it prevents the 8 percent or so of loss through shrinkage in the fruits which growers learned to expect when the old methods were used; and it cuts down the loss from decay associated with the coloring process, which has been a very serious matter in the past. The new method is now in general use in Florida, where it is estimated to save citrus fruit growers about $3,000,000 a year.

Nowhere in this country, except in our Division, is there such a broad program of work on the under-stock problem. Just how important this work is can be realized by remembering that formerly we imported actually millions of seedling stocks for budding and grafting. Our work on nursery stocks has already aided American growers in replacing these imported stocks by home-grown stocks. We have done more than that; we have shown that certain varieties of apple, cherry, and plum seed from domestic sources are more dependable and otherwise desirable than much of the seed and many of the seedlings formerly imported for stock purposes.

A large proportion of the seed now being used by our growers is from domestic sources. The work is gaining added importance, too, because of the quarantine regulations against foreign plant importations.

One of the first things we were able to demonstrate was that seeds of certain of our American varieties produce much superior seedling stocks than others--which was to be expected, but which it was left for us to prove. We took another step forward in accumulating evidence that poor stocks are often due to immaturity, the nurserymen being in too great a hurry to dig and market the plants. Having diagnosed the trouble we expect to be able to write a prescription so that nurserymen may have a measure for maturity and know when to dig and market the seedlings with the best assurance for success.

These investigations have followed the general plan of the Division in placing the greatest importance on quality--the production of better quality fruit trees and ornamentals rather than merely working for increased production. They seek to point the way to uniformly vigorous trees, productive, adapted to various soils and climatic conditions. and resistant to diseases and insect pests.

The possibilities for high dividends are great, as these investigations concern themselves with an industry whose products return more than $58,000,000 annually to growers, this total not including the profits to brokers, wholesalers, commission men, and retailers who merely buy and sell. A peach rootstock resistant to nematodes could be counted on to save peach growers annually several times the cost of all of the work of our Division. Throughout the southern peach producing States, nematodes are a most serious and costly root pest in peach orchards. We have found a peach rootstock immune to this pest. We are subjecting this stock to comprehensive tests to fit it for use in commercial orchards.

The woolly apple aphis is probably the most serious root insect pest on apple trees throughout the country from the standpoint of both the nurseryman and the orchardist. While the aphid-resistant stocks developed have not proved adaptable to all varieties of apples, we have every confidence that the work now in progress will produce other resistant ones and ultimately provide stocks which are not only resistant but suitable for all varieties of apples, and under varying conditions.

Stocks for dwarf apple trees must be propagated vegetatively rather than from seeds. These stocks were formerly grown and sent to this country by expert plant propagators from abroad. We have now worked out methods for propagating these stocks in this country.

Some 15 years ago, Dr. Walter T. Swingle, on a visit to the Gulf Coast region, gave Satsuma orange growers a demonstration which very likely saved the industry from failure. He pointed out to them that the Satsuma was not, as they believed, a single uniform variety, but instead a group of rather widely differing strains. It is not difficult to picture the problems of handling and marketing the crop if the growers had been permitted to go ahead planting Satsumas without regard to strains.

Doctor Swingle did not stop there. He advised them as to the best strains--those which seemed most likely to prove profitable under American conditions. Since then he has continued his interest in this work and has gradually secured by introduction, selection and breeding types of the Satsuma which not only prove well adapted to Gulf Coast conditions but which are likely to make the Satsuma orange the basis of a new and non-competitive fruit industry.

We are now introducing new hardy and early-ripening strains of Satsuma oranges, equal or superior to the standard sorts, and ripening in October and November when oranges are scarcest and few other tree-ripened citrus fruits are available. This is the period when the Valencia oranges have been marketed and sold, and before the Florida crop is shipped. At the same time, the early ripening strains take the Satsuma out of competition with the tangerine oranges of Florida--a competition which might very easily have brought about the complete ruin of both industries.

A sort of "new place" effect has been found in connection with some of the introduced Satsuma trees. Doctor Swingle found in Japan some strains maturing from 2 to 4 weeks ahead of the main crop varieties. These early strains are called "Wase" Satsumas. Under Japanese conditions they are of doubtful value because of their dwarf tree character and strong tendency to reversion. Introduced and tested in the Gulf Coast region of the United States, however, at least one of the strains,

the Kawano, has proved to be fully as vigorous as the standard Satsuma orange variety, the Owari, and shows no tendency to reversion. The early maturing habit surviving in this region makes the Kawano fruit available for shipment at least 2 weeks ahead of the main crop, thus assuring a non-competitive product which can be harvested long before there is any danger of frost injuring the maturing fruit. It also avoids a "peak load" in the shipping season by allowing the crop movement to be spread out over a longer season.

It is decidedly unusual to be able to take such a fruit as the orange, with its constant threat of over-production, and show that it may actually be made into a non-competitive crop, as has been done with the Satsuma orange, but there is a wide field open for the introduction and establishment of a considerable variety of new and non-competitive crops. This is a line of work in which Doctor Swingle has been interested for years, and the opening up to intensive crop production of large areas of land through such projects as Boulder Dam and Muscle Shoals is bringing into increased notice the imperative need for these non-competitive crops, for every acre planted to them means an acre taken out of competition with our standard farm crops.

Statistics included in the Department of Agriculture Yearbook for 1933 show that in 1929-30, we imported $1,214,176,000 worth of vegetable products. More than a billion dollars worth of vegetable products, and yet we have in the United States a greater range of soils and climates than are to be found in any other civilized and highly developed country in the world. We could not, of course, grow for ourselves all of the things we now import, because for one reason or another, some of the crops which might be grown could not be produced with profit. But Doctor Swingle is convinced that we could grow with profit fully a third of these imports--a matter, say, of $400,000,000 worth. It can be done, it has been done, and we're doing it--on a preliminary scale.

The successful establishment of date growing on a commercial scale in this country, accomplished under Doctor Swingle's direction, shows that the thing can be done. Though we have been importing from 4 to 6 million dollars worth of dates year after year over a long period, it was not until he started his investigations that any serious attempt was made to grow dates in the United States. Now, our associate W. R. Barger, who has for some time been stationed in the center of American date growing (the Coachella Valley of California) helping growers with their problems of curing and storing dates, writes that the 1932-33 crop of that region was estimated to be about 4,500,000 pounds of dates, superior in many ways to the sorts generally imported. So it appears quite reasonable that the American growers will ultimately be able to replace imported by home-grown dates to a considerable extent.

Better still, by specializing on quality and demonstrating that they can produce dates of a very superior quality, the American growers are unquestionably going to bring about a greatly increased consumption of dates--one of the most useful of foods, and one that in some parts of the world is used to an even greater extent than we use bread and potatoes.

The establishment of this new and non-competitive industry, date growing, has also served to illustrate the difficulties involved. There is much more to it than the mere introduction of a crop plant. Almost all such efforts give disappointing results at first and it has been found difficult to enlist the interest of growers in

new crops unless expert supervision can be given continuously during the experimental trials. Our farmers and orchardists start out under a decided handicap of inexperience in handling the crop and so must be guided carefully.

The Deglet Noor, one of the very finest of the Old World date varieties, and originally considered very promising for culture in the drier, hot, irrigated valleys of California and Arizona, for example, failed to produce a pound of fruit of marketable quality for 8 years after the palms began to bear in this country. Scientific studies were necessary to work out the correct methods for satisfactory fruit production under our conditions. Similar difficulties must be expected with other new crops.

If this were a general report to stockholders, with emphasis on dividend production, instead of being, as it is, merely a running comment on some of the relatively little known phases of our work, it would need to devote more space to a discussion of fruit and vegetable handling, transportation and storage investigations. These investigations stand out in a discussion of dividends because it is easy to give definite figures.

Last fall, for example, we supervised the first full-load shipment of fresh fruits by water, a cargo of 88,873 boxes of pears from Portland, Oreg. to New York City. The saving to Hood River growers in transportation costs amounted to about 25 cents a box--or something more than $22,000 on this single shipment.

It is probable, however, that the greatest value of this work is not in the monetary saving it has effected for growers and shippers, but in the fact that they have made it possible to grow with profit crops suited to special regions, even though such regions may be thousands of miles from the best markets.

Through these investigations we have found means for reducing to a great extent the serious losses in transit which formerly occurred, and so have made possible great financial savings to growers, railroads and marketing agencies. Through the determination of the proper kind and amount of refrigeration necessary for shipping perishable products across the United States, and to foreign countries, refrigeration costs to growers have been substantially reduced. Principals of storage have been developed and placed in effect so that part of the crop may be withheld from the market for long periods, permitting more orderly sale of the products, with decided benefit to grower, handler and consumer. This one project returns to American growers many times the cost of all our work.

The possibilities, too, of the vegetable standardization studies are truly extraordinary. If we succeed in saving the growers not more than 10 percent--and this should be easy--by eliminating the poor layers and scrub cows of the more important vegetable crops, we are going to put not less than fifty million extra dollars each year into the pockets of vegetable growers in this country!

And there are the bacteriological studies of Doctor Magoon, undertaken in connection with fruit and vegetable utilization activities; Mr. Wight's fruit breeding work; the vitally important investigations of Dr. Lee M. Hutchins in connection with the identification and control of the serious phony disease of the peach; Doctor Griffith's lily breeding--

This lily breeding, of course, is one of our so-called minor lines of investigation and is carried along with very little, if any, added expense in connection with Doctor Griffith's general bulb investigations. It is mentioned primarily because it is one of the activities not yet generally known. It is only just about now that his new lilies are being introduced to the trade. But all who have seen the new hybrids at the Bellingham, Wash. bulb gardens are loud in their praise and enthusiastic over their future.

While, of course, these bulb investigations amply justify themselves in enabling this country to replace millions of the bulbs we formerly brought in from the Old World, they are also illustrative of the fact that our Division has always remembered that man does not live by bread alone. We have steadily combined the ornamental with the useful, and our publications on flower growing, bulbs and landscape gardening are among the most popular in the Department's lists.

Ornamentals may not be very useful as a direct source of food materials, but indirectly they rank high in the list of horticultural products. Thousands of human beings depend for food and lodging upon the growing and handling of flowers and ornamentals. The annual receipts from the sales of flowers, bulbs and nursery products run pretty close to $200,000,000-a-year. Anything done to improve varieties or methods of handling means thousands of dollars to growers and merchants.

Touching upon this point, it is well to call attention to the fact that imported bulbs have an annual value of around $4,000,000. Nearly all of these stocks may now be grown successfully in the United States. Without the aid and information supplied by the investigations on the subject by workers in our Division, the present rapidly developing commercial industries based on these commodities would not be possible. In fact, when we started our bulb work there were plenty of people to tell Doctor Griffiths that it couldn't be done anyway. He has confounded those critics, gone along to acquire and make available information which it would have taken a generation to have developed through the experience of individual growers. The magnitude of the business in ornamentals may be indicated by stating that this country now uses about 200,000,000 tulip bulbs a year. This one branch, figuring that the growers get from $10 to $12 a thousand, runs into almost twice the annual cost of the entire work of the Division.

In addition to Doctor Griffiths' breeding work with lilies, we have the early blossoming types of hardy chrysanthemums which are being developed by Mr. Mulford, and a rose stock from nursery investigations which has so far proved superior in growth and flower production to all others tested.

We do all these things, and a great many more. Better still, the information obtained is placed in the hands of our stockholders very promptly. It has been said that only so far as knowledge gained in the Department is disseminated and applied is the existence of the institution justified. Our Division is well prepared to stand or fall on that basis. More than 350 papers have been contributed to the Department's bulletin and circular series, as many more to the Yearbooks and the Journal of Agricultural Research, and literally thousands to outside agricultural and scientific journals, reports and proceedings. In addition many thousands of emergency circulars, multigraphed or mimeographed, have been distributed, in the process of getting our information into the hands of growers promptly.

The standing of our publications is a matter of extreme gratification. Some have been translated into foreign languages; others are incorporated into textbooks here and abroad. All are invaluable in handling correspondence.

The report of the Director of Information for the U. S. Department of Agriculture, for the fiscal year ended June 30, 1932, states that our popular publications cost about 1-1/4 cents a copy, whereas the average cost of a letter dictated by a scientist to answer an inquiry is about 26 cents, and as a rule, the publication will answer the inquiry in a more comprehensive manner and be more carefully prepared than the letter. The Superintendent of Documents has a minimum charge of 5 cents for our publications, but for this one may secure a one-sheet leaflet, or a 30-page illustrated Farmers' Bulletin.

At the present time the Department at Washington is receiving the greatest volume of mail in its history. Even in normal times, however, as many as a million letters a month are received. Our Division, of course, gets its full share of these inquiries, so that it is easy to see how important publications are in reducing the cost and increasing the efficiency of distribution of the information asked for by the writers of these letters.

Of great importance, too, is the part the distribution of publications plays in giving the general public a clear idea of the work we are doing; and practically all criticism of the work is based on lack of information. The average individual is a square shooter, and all we need do is make it plain to him that money for agricultural research is not actually an expenditure but an investment. No Wall Street speculator in the wildest of "boom" days ever received the return on his investment that the American public has received on the money spent for fruit and vegetable research activities.

As a matter of fact, this is pretty generally recognized. The Scientific American for March, 1933, for example, paid us the compliment of discussing our activities in some detail, with emphasis on its dividend-earning possibilities. "The accompanying article discusses with much vigor a different kind of 'Report to Stockholders,'" said the editorial foreword to the article in question. "From the facts presented here, we begin to suspect that, hidden away in the maze of governmental departments, divisions, and bureaus in Washington there may be, must be, many others beside the one discussed (Fruit and Vegetable Crops and Diseases) that pay huge dividends to their stockholders;; to you and to me..."

It is extremely gratifying to the members of Uncle Sam's Federal family to see the increasing respect with which Government activities are being regarded of late. That splendid reporter and keen observer, Will Irwin, has lately said: "...in spite of...Teapot Dome scandals, in spite of loose political spending during certain periods of stress, the Federal Government at Washington has stood since the Civil War as the most honestly and efficiently managed among those innumerable units of government to which we pay taxes and from which we are demanding more and more service."

It has been estimated that the $4,000,000,000 a year spent for Federal activities represents about 7 percent of our national income. Some of the things we get in return for the 7 percent are free schools, pure food, good roads, honest weights

and measures, police protection, national defense, public libraries, museums, art galleries, parks and playgrounds, etc. etc. About 70 percent of Federal expenditures go to the payment of war debts, veteran relief and the support of the army and navy. The Federal pay roll is something over $1,000,000,000 a year for 620,000 regular employees, of which nine tenths live in the 48 States and one tenth in Washington, D. C. Approximately one half of the 620,000 employees are in the Postal Service, with their salaries paid in part from postal revenues. The investment by the Federal Government in agricultural research represents about 50 cents out of every $1,000 of national income.

"In times of great religious decay," commented a writer in the Southern Agriculturist sometime back, "it is not unusual for those suffering most to stone the prophets. Of course, at a time like this, wisdom dictates that they should rally to their prophets and give them unusual support." He goes on to say that the agricultural expert is the farmer's prophet, and that just now the farmer needs all the expert knowledge he can get. In prosperous times it is difficult to bring about changes in the methods used by the farmer and orchardist; they much prefer to let well enough alone. So a silver lining in the cloud that has spread over the agricultural world is found in the fact that growers have been welcoming instructions that promise improvement.

In one of his reports from Charleston, S. C. last August, Dr. Wm. D. Moore wrote: "We have noted a more active movement on the part of most farmers in getting the latest information on all phases of vegetable crop research. We are constantly answering questions on seed sources, varieties, and disease control. In striking contrast to the sentiment of five years ago, most growers say now that they cannot go on without the aid of our information."

And so, as Secretary Wallace has said, our work will go on; the job of scientific research in agriculture is not over, nor will it ever be. We need new varieties, more efficient production, wider markets--and to the old job we must now add the new one of fitting production to demand.

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THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.

John A. Ferrall, Editor

This NEWS LETTER is for distribution only to employees of the Division, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field Workers and others represent, of course, their personal opinions, and thus are not necessarily the official and final word on the subject.

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Interesting Publications

Some very interesting papers are being contributed to outside journals as a result of studies which are carried on jointly by workers in the fruit and vegetable handling, transportation and storage investigations and the fruit and vegetable utilization sections. Prominent among these publications is a study of "Varietal Adaptability of Peaches to Freezing in Small Consumer Packages." This was contributed to the August, 1933, issue of the Fruit Products Journal by J. S. Caldwell, J. H. Lutz, H. H. Moon and A. T. Myers.

Peach varieties, it is shown, present very great differences in color, texture and flavor, and consequently differ greatly in appearance and dessert quality after freezing by identical methods. This emphasizes the importance of studies to prevent losses through the use of unsatisfactory varieties. Of 56 varieties of peaches studied and reported upon, only nine made a ready-to-serve dessert product which was ranked as very satisfactory in texture and in degree of preservation of natural color and characteristic flavor and odor. The other 47, of course, were not a total loss, but showed some more or less undesirable characteristics as compared with the high-ranking varieties.

Comparable studies of the effects of slow freezing and rapid freezing at three different levels of temperature have shown that in non-airtight containers best preservation of color is obtained by slow freezing and that discoloration becomes progressively greater as the temperature to which the fruit is exposed in the freezing process is lowered.

In sealed containers, these differences were not observed, but the rate and degree of discoloration and deterioration in flavor occurring when the material was exposed to air became progressively greater in material frozen at the lower temperatures, regardless of the type of container in which it was packed.

Strawberries are discussed in "The Quality of Different Varieties of Eastern Strawberries when Frozen in Small Packages," contributed to the September, 1933, issue of the Fruit Products Journal by J. M. Lutz, Joseph S. Caldwell, H. H. Moon and A. F. Myers. D. F. Fisher, G. M. Darrow, G. F. Waldo and C. A. Magoon cooperated in the examination of the material discussed in the paper. It summarizes the results obtained in 1930, 1931 and 1932, during which time the suitability for freezing in such packages of 65 named varieties and 134 unnamed hybrids was studied. Incidentally, several of the Darrow-Waldo unnamed strawberry hybrids appear to be equal to, or even superior to, the best named varieties thus far tested in their adaptability to preservation for dessert purposes by freezing.

The October issue of the Canning Age has a paper by James A. Berry, "Some Findings on Microbiology of the Cold Pack," representing part of a study to determine the suitability of moderate freezing temperatures for frozen pack, and tracing the changes in the microbial content of Marshall strawberries, Cuthbert raspberries and Evergreen blackberries packed in different ways and stored at various low temperature for from 4 to 13 months. Also, results of studies of the microorganisms persisting in frozen pack peas and spinach for 9 to 24 months are presented.

The fruit packs were analyzed at intervals of two weeks for the first three months, and once a month thereafter. Tables are presented which show two main facts: (1) The much more rapid killing of microorganisms in the temperature zone 15° to 20° F. than at minus 5° F.; (2) The growth of microorganisms in non-airtight containers at 25° and 28° F. as contrasted with the rapid drop in numbers in sealed containers at the same temperatures.

Studies on peas, blanched and unblanched, with and without brine, revealed that acid-producing organisms, chiefly Lactobacilli, will persist for at least two years under storage temperatures of 15° F. and will form in peas one per cent or more of acid, as lactic acid, in two to five days at room temperature. Organisms of the "colon" group were found to persist in frozen pack spinach stored at 15° F. for at least nine months.

The chief types of organisms persisting in the frozen pack fruits were Cladosporium, Penicillium, Oidium, Yeasts and species of Flavobacterium.

"Obtaining Optimum Dessert and Canning Quality from the Kieffer Pear: Some Influential Factors," appears in the Canning Age for September, contributed by J. H. Lutz, C. W. Culpepper, H. H. Moon and A. T. Myers. The same authors are represented in the October 14, 1933 issue of The Canner by a paper on "Factors Influencing the Dessert and Canning Quality of Kieffer Pears."

Kieffer pears picked at approximately 10-day intervals over a 40-day period, five pickings in all, were stored for ripening, both with and without previous storage at 32° at temperatures ranging from 40° to 100° by 10-degree intervals. The fruit held at 60° F. either with or without previous storage at 32° F. developed a flavor and a texture markedly superior to that of lots held at either higher or lower temperatures, and the quality, when eaten fresh or after canning, was better than it is usually considered possible to obtain in the Kieffer.

Fruit held at temperatures higher than 60° developed good color, but softened very little (not at all at the higher temperatures), and the flavor was very inferior. That held at 80° or higher was so woody and lacking in flavor as to be inedible, either fresh or after canning. Prolonged processing did not improve the flavor or texture of the high-temperature lots, but produced a pronounced general pinking discoloration of the flesh.

Fruit stored at temperatures below 60° did not develop yellow color, softened very slowly, and never developed quality comparable with the fruit held at 60°. Pears held for 60 days at 32°, and subsequently transferred to 60°, ripened with excellent texture and flavor and made an acceptable canned product.

Another paper of decided interest appeared in the August number of Food Industries, under the title "Enzymes Can Cause Off-Flavors Even when Foods are Frozen." It was prepared by H. C. Diehl, J. H. Dingle and J. A. Berry.

It reports that the autolytic enzymes cause a deterioration in color as well as the development of undesirable odors and flavors in frozen peas and other vegetables unless these enzymes are inactivated or destroyed. Failure to understand this problem has been very costly to packers. The paper describes simple tests to indicate the activity of the enzymes and the effect of scalding thereon, and which may be employed to insure the preservation of maximum quality in the frozen product.

It should be added that these papers represent only a small part of the extensive list contributed by our workers to outside journals and are mentioned chiefly because the NEWS LETTER happened to receive copies. There is a gentle hint in that sentence for any employee who happens to utilize outside mediums for his publications!

FRUIT AND NUT PRODUCTION

Milo N. Wood, Sacramento, Calif.

"In practically every instance where artificial pollination has been conducted there has been some increase in yield even in cases where a high percentage of the crop has been destroyed by blight and sunburn," he writes on October 21, in connection with a report on walnut pollination. "In numerous orchards last spring dichogamy records were kept and the percentage of a crop was calculated as based on the completeness or incompleteness of dichogamy in a number of cases. In examining all such orchards it is rather remarkable the way the crop agrees with the estimates made although in some cases blight has interfered with obtaining accurate results. However, in practically all of the orchards where dichogamy was pronounced the crop was very light and in other nearby orchards where pollination was accomplished naturally due to a mixture of varieties, crops are very much heavier....

"The work has been rather heavy in collecting almonds from the hybrid trees in the experimental plots at Davis. The crop on these plots has been very good and some of the very young trees came through with a much better production than was expected a few months ago. Some time has been taken in evaluating the trees. During the next two weeks it will be necessary to go over all of the plots with a view to determining the qualities of each tree from a spider resistant standpoint. It is probable that about 12 trees out of several thousand will be saved because they have during previous years proved to be remarkably resistant to this pest."

On September 30 he had reported: "Most of the time in the field has been taken up in collecting data upon the walnut pollination experiments. The experiments in the San Joaquin Valley with the different types of bags used for the purpose of isolating walnut pistils have again shown that no type of bag is at all satisfactory because the nuts and tips of the twigs become overheated, resulting in almost total loss of crop. Cellophane bags and glassine bags were very unsatisfactory. On the other hand, the use of the cotton as previously developed proved to be very satisfactory.

"The application of the walnut pollen to the Eureka orchards in the Escalon district has given remarkable results in the increase in production of the pollinated plots over the check plots. These particular experiments are especially important in showing that the results obtained may be even more marked in the Eureka variety, used in the experiments for the first time this year, than has been the case in the Payne variety, to which the experiments have been applied for several years."

FRUIT AND NUT PRODUCTION

H. L. Crane, Albany, Ga.

"The first harvest was made on the Schley pruning and spraying block in the Barnwell Pecan Groves," he writes under date of October 21. "This experiment in cooperation with the Bureau of Entomology is showing up the value of black aphis control. The experiment consists of four plots, as follows: Plot No. 1, Bordeaux plus nicotine; Plot 3, Bordeaux-nicotine-pruning; and Plot 4, Bordeaux only. The trees were sprayed in 1932 and 1933. Plot 4 defoliated early in the fall of 1932, and this year(1933) produced little pistillatebloom and no nuts. Plots 1, 2 and 3 retained the foliage late in the fall in 1932 and this year the trees will yield six to fifteen pounds of nuts each.

"Crane, upon his return from the West, spent a considerable portion of the early part of the week in inspecting the orchards and experiments in the vicinity of Albany. In the three weeks elapsing since I saw these experiments and orchards, great changes had taken place in the condition of the trees. Orchards which have been cared for, i.e., fertilized, cover cropped, cultivated, and pruned, are still carrying their leaves in good shape. The orchards which have received little or no care, of which there are many, are practically defoliated at this time. Some orchards and certain varieties in still other neglected orchards have put out a new crop of leaves."

Elmer Snyder, Fresno, Calif.

"A vineyard was visited during the week where Phylloxera insects were found on the roots where the vines were on heavy soil and on higher ground in sandy soil the roots were found to be infested with root-knot nematode," says the report for the October 16-21 period. "In this same vineyard, our Solonis x Othello No. 1613 stock interplanted between two-year-old Sultania (Thompson seedless) rootings, showed no nematode infestation while the Sultania roots were practically rotted off....The factor of nematode-resistant stocks is fast becoming of importance on the light soil types in the San Joaquin Valley. In fact, vinifera vineyards are injured much faster by nematode infestation than by Phylloxera.

"Last season's tests indicate that there is very little difference in resistance of the common commercial varieties of vinifera to nematode injury. Twenty five of the commercial varieties were carried under test for one season and practically all of the roots on all varieties were either completely rotted or badly infested with root-knot nematode."

B. G. Sitton and J. L. Pelham, Shreveport (and Robson), La.

"The trees on the station have made such wonderful growth during the past season that we are receiving many favorable comments on them and many inquiries as to how we were able to secure such fine trees in the short time they have been planted--three years." Report of Oct. 21.

FRUIT AND NUT PRODUCTION

Wm. R. Barger, Indio, Calif.

"The American date harvest is now in full swing, with a crop that will probably surpass the one of last year of 4,500,000 pounds both in size and quality," he writes October 24th.

"Picking started about the 20th of September, which is around 10 days later than usual and the later ripening district west of Indio started to pick around October 9. No damaging rain or high humidity has reached the crop so far, altho we have had several unwelcome visits of clouds and low air pressure. With all districts picking, the Association which handles over half the Deglet Noor crop is receiving between 50,000 and 60,000 pounds a day and turning out between 30,000 and 35,000 pounds of finished packed fruit a day of one eight-hour shift. Three cars, 26,000 pounds, minimum, have been shipped to the east (warehouse pre-cooled and initial ice only), and after the West Coast is amply supplied the rest is placed in storage here or at Los Angeles. The packing house has to store about a quarter of the pick each day during the peak of the harvest in lug boxes to await facilities for further handling and packing. This fruit is given the first grading as it is received and most of the fruit of 'ready to pack' condition can be handled immediately with the present equipment. A second shift working from four until midnight will probably be needed to take care of the 'ready to pack' fruit later on, but this system has been used before and is not impracticable for dates. Our experiments show that cold storage of 'ready to pack' fruit in lug boxes prior to final packing is possible, although drying the 'sweat' on cold fruit at removal from storage is no fun. The lack of sufficient cold storage space near by has kept this system of handling out of general use."

(Note: Mr. Barger adds, though not for publication: "I predict a short crop of the 'Gratis' strain of dates that I am interested in, but if the weather is favorable the markets will be well supplied with 'Dates American,' the fruit that puts summer sunshine into winter menus. The data so far seems to indicate that the 'Gratis' strain has the most sunshine, and I regret curtailing this line of investigation!")

"The past month in the laboratory has been spend in storing dates that are practically alike in sugar maturity but vary in moisture content, in an attempt to correlate moisture content with sugar deterioration of dates, the crystalizing our of dextrose," he continues in a for-publication-tone. "We will also be able to observe the effect of moisture content upon souring of the fruit.

"Early pick ripe and hard-ripe Deglet Noors have been placed in storage for ripening and packing in December.

FRUIT DISEASES

J. C. Cole, Shreveport, La.

Writing on November 4, he tells of an interesting visit to orchards around Shreveport and the checking up on a disease so similar to rosette that he thought it might be rosette until spraying with zinc failed to stop it. The disease was first observed by him near Shreveport in 1930. The foreman of the orchard said that he had observed some of it as far back as the time he had taken charge--in 1923. It has become much worse in the past few years. "It first attacked the native trees" writes Mr. Cole, "and is now attacking the Schley variety. Where Schley and other varieties are growing on the same trees, Stuart and Moneymaker, the Schley may be severely attacked while the other varieties are apparently healthy. In checking upon the range of this disease, I have seen it from Colfax, La. to Taxarkana, Ark. It attacks trees from two and three years old up. The first signs are a bunchy growth at the top, side or almost any part of tree and an abundance of flush growth from the trunk and limbs. The trees gradually die back similar to rosetted ones, but there is no chlorosis or narrowing of the leaves. The foliage is abnormal and may be crinkled in some stages. Sometimes the leaves have a velvety appearance. Extensive laboratory work will be carried on this winter and different chemicals, especially copper, will be used to treat the diseased trees next summer."

Leslie Pierce, Vincennes, Ind.

"The entire week was spent in investigating the extent of the damage caused by the outbreak of apple trunk blight that was first noted here in August," he writes October 28. "Affected trees were found in all of the seven orchards examined. Varieties other than Grimes were not examined in six of the orchards. Two affected trees was the smallest number found in any one of the seven orchards examined. In both cases the blighted areas were on the trunks of Willowtwig top-grafted to another variety. In two of the orchards more than 50 per cent of the trees showing normal growth had been completely girdled by blight. Trees making slow to moderate growth in thin soil were not affected. Only a small percentage of all the blighted trees showed evidence that the disease had entered the trunks through water sprouts. Most of the trunk infection traceable to water sprouts was found on Winesap.

"In two of the orchards, severely damaged by the disease, there is some evidence that infection was spread by the disc blades when the trees were cultivated in late spring. Of the three orchards examined so far where the disease has caused the most severe damage, the trees in one received three moderately heavy applications of sulphate of ammonia, while in the other two no nitrate was applied. Two of these orchards were thoroughly cultivated and the third received no cultivation during the season. Only two trees have been found that show evidence that infection might have been carried on pruning tools."

FRUIT DISEASES

Lee M. Hutchins, Fort Valley, Ga.

"The sentiment among growers for cutting out phony trees is constantly growing," he says in his report for the week ending October 21. "Mr. Turner has some excellent data now on the decrease in the incidence of new cases of the phony disease following three successive years of eradication in heavily infested orchards----"There is a prominent swing to early peach varieties in Central Georgia. Nothing later than Hiley is being planted extensively, and there is a marked trend to experimenting with early freestone peaches. The Golden Jubilee came into bearing in the Duke orchard this year, but the fruit was far from satisfactory in quality and appearance. Of course, the variety will have to be observed through several seasons but it we are to judge by the year 1933 the Golden Jubilee will not become an important factor in Central Georgia peach production."

J. B. Demaree, Albany, Ga.

"Some rather startling things have happened during the past month," he writes October 21. "It must be remembered that no beneficial rains have occurred in the Albany region since September 6th. At that time about one inch fell at Albany, while the Baconton neighborhood got about 2.75 inches. In the regions getting the light rain during the first week in September, the pecan foliage has deteriorated considerably and heavy defoliation has occurred in the neglected orchards. Due to the weakened condition of the trees, aided by occasional light showers, leaf blotch has spread extremely rapidly during the past two months. It is difficult now to find unaffected foliage on non-sprayed trees. Even one application of spray made during midsummer furnishes remarkable protection against infection by the blotch organism...."The drought has brought out some rather interesting information in regard to use of fungicides on pecans. Four applications of a 3-8-50 Bordeaux mixture caused almost complete defoliation on Schley. Four applications of a 3-4-50 Bordeaux resulted in considerable damage, but less than where the double amount of lime was used. A dilute Bordeaux, where 2 lbs. of copper sulphate and 2-1/2 lbs. of lime to each 50 gallons of water were used, caused only moderate injury. Alley and Stuart trees show greater resistance to drouth and Bordeaux injury than Schley and Delmas.

"One of the most striking results brought out in our spraying experiments this year was the almost complete protection the sulphur sprays furnished against black aphid infestation. Sulphur furnished far greater protection than nicotine and suggests the use of a combination of sulphur and copper sprays for our next year's work. I am also glad to report that the foliage on the trees sprayed with Dr. Roberts' new compounds of copper is holding up in splendid condition during the drouth. His copper phosphate especially looks promising as a pecan scab spray providing the scab control can be increased somewhat."

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

The fish we didn't catch! Of course, I know that even the best of fisherman occasionally lose the big fellows, but editorial tears flowed freely at the sight of the letter I am about to quote, received too late for inclusion in the "Reporting Progress" issue of the NEWS LETTER. Incidentally, the date on the first page of that issue should be November 1, not November 11--let the cover be your guide!

"In talking with Mr. J. L. Nagle, Manager of the California Fruit Exchange at Sacramento, Calif. recently," Dr. C. W. Mann writes to Doctor Auchter from Pomona, Calif. on October 17, "I was impressed with the importance he attached to the work of this Division in developing the methods now used in car precooling of plums, apricots, peaches, pears, and other fruits. The Exchange evidently sees in the precooling process a means whereby the more perishable fruits may be allowed to ripen sufficiently before picking to insure more satisfactory eating qualities when they reach the consumer.

"Certain leading shippers have also stated that the method of precooling has opened a new and important field for wider distribution and sale of the more perishable varieties of fruits grown on the Pacific Coast. More than 12,000 carloads of these fruits have been precooled so far this season. In addition, it has been possible on many of these shipments to realize a saving of from $30.to $50 a car in the ordinary cost of refrigeration by making it unnecessary to reice the shipments en route. Last season the deciduous fruit shippers saved over $200,000 in expense of refrigeration by precooling and icing of shipments at packing houses. In many cases the record of these shipments was incomplete so that the total saving through the use of this method was considerably more than the amount stated."

While this sounds like a "fish story," it is absolutely true and supported by the facts. As Doctor Mann states, it is actually an understatement, so far as the $200,000 total is concerned, as the saving was a good bit more than that. I am sorry it missed the "Progress" issue--but it is still in plenty of time for Thanksgiving!

Cruiser-Vessel. H. C. Diehl reports the arrival at Seattle on October 25 of the finest cargo vessel ever seen in Seattle Harbor--the Washington Express of the Fruit Express Line. "She has the lies of a cruiser and a forced draft speed of 19 knots," he explains. "One hundred and five thousand boxes of apples can find a resting place in her holds."

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

G. B. Ramsey, Chicago, Ill. (Market pathology notes)

"Apples showing calyx injury and various other blemishes resulting from spray removing processes are causing a great deal of trouble at this time," he comments in his report of October 27. Severe discoloration about the calyx has been noted in several lots and in many decay has already caused considerable damage. Storage lots are likely to show excessive decay unless precautions are taken.

"Texas grapefruit has shown many peculiar troubles lately. Apparently most of the damage is due to the effects of the storm and the harvesting and packing conditions immediately thereafter. Stem-end rot has been the most important decay.

"During the last part of September three cars of lettuce from Washington arrived on the Chicago market showing stock in the top layer of crates badly frozen. These were mechanical refrigerators whose thermostats apparently had been set too low. The service man on the tracks said that these cars were set for 35° F. These cars were loaded so heavily that the top layer of the crates came within about 10 inches of the refrigeration coils in the top of the car. This apparently did not allow for enough circulation considering the fact that package ice and body ice were also used."

H. C. Diehl, Seattle, Wash.

"As a result of our showing samples of our frozen cider, prepared in 1932 in various ways, clarified with Pectinol as well as not so treated, a program of preparing frozen pack cider at the Spokane Street Terminal is under way. We had given the results of our observations to interested parties in Seattle and this action, taken with the large quantities of C grade apples available east of the mountains, led to the adoption of the program. The Port authorities and others here as well as in Yakima and Wenatchee are deeply interested in the matter as a constructive, and, it is said, very profitable method for easing the cull and C grade apple problem east of the Cascades.

"In this frozen pack cider program as well as in the matter of salvaging the surplus pea crop and aiding in the utilization of the Elberta and Hale peaches by groups attempting to work out some program for the return of more money to the farmer for his produce, we have participated with technical advice and suggestions based on the results of our experience, only at the request of the parties interested."

(This frozen cider proposition certainly looks like a long step in the direction of taking care of rejected apple tonnage which must now be hauled away and treated as waste. A great idea if folks will swallow it!)

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

Edwin Smith, Wenatchee, Wash.

"The first week of October was devoted to picking Delicious and to washing experiments," he writes October 18. "Mr. Ryall was in Wenatchee from October 5 to 11 to handle washing tests from known spray programs with Jonathans. This week he again is in Wenatchee to cover the washing of Winesaps at harvest. In the meantime the industry is progressing with washing more satisfactorily than was anticipated....

"More double process machines (sodium silicate followed by HCl) are being improvised for difficult lots and these are giving satisfaction. Now that Winesaps are being packed, higher temperatures are being used with sodium silicate and some machines are being changed back to alkaline washes. However, some early picked Winesaps cracked badly in sodium silicate at 110° when exposed for a minute.

"In our experimental tests we had severe injury of Jonathans (cracking with black calyx-end burning) which had been sprayed with six covers of cryolite and washed with HCl. A lot sprayed with arsenate of lead, first three covers, and cryolite, last two covers, were injured badly at the calyx and when washed with HCl plus NaCl plus Vatsol, 1.5 minutes at 80° in a flotation machine. Shorter exposures to acid did not seem to cause this injury

"Mr. Carter has made splendid progress with his fluorine analyses and is at present turning them out as fast as the rest of the laboratory covers lead and arsenic."

ADMINISTRATIVE NOTE

N.R.A.CODES. It is important that a provision be placed in each written order for purchase of supplies or materials to the effect that the order is contingent upon the dealer's compliance with the provisions of the N. R. A. code applicable to his industry, or with the President's Reemployment Agreement. In placing orders verbally, possession of an N. R. A. emblem is acceptable evidence that the dealer is meeting the necessary requirements of the National Recovery Administration program.

Field men may place orders for materials under accepted bids without further stressing the above requirement, since the Department, in accepting the bid, has developed the necessary evidence that the dealer has complied with all N. R. A. requirements.

FRUIT DISEASES

G. A. Heckstroth, Chadbourn, N. C.

Writing on October 21, he says: "The yellowing and leaf variegation of the Blakemore strawberry is becoming less conspicuous, which I believe is due to the fact that the amount of green is gradually becoming greater. Several weeks ago yellow was predominating. Dr. Lineberry poured dilute solutions of ferric chloride and manganese sulphate around some of the plants, but apparently there is no response to these treatments; all the plants are losing the yellow color, the treated as well as the control plants. No normal runner plants were seen on the yellow mother plants. It is believed that it is a genetic trouble rather than a transmissible mosaic disease."

H. J. Bergman, Amherst, Mass.

Writing from Amherst on November 4, concerning the work of the Cranberry Disease Field Laboratory at East Wareham, Mass., he notes that many of the Early Blacks are rotting rapidly in storage, while most of the later varieties are holding up quite well. Sprayed lots in all cases are in much better condition than unsprayed. "There have been some heavy losses on shipments of Early Blacks to distant points. Yesterday a sample was received from a carload of Blacks which had been shipped to a point in Texas. I have never seen berries in a worse condition, hardly a sound one among them. The trouble seems to be due to a large extent to physiological 'break down' complicated of course by fungous rots."

John C. Dunegan, Fayetteville, Ark.

"During the course of the year I have isolated Phomopsis mali from a number of apple leaf spots and I transferred small pieces of agar with mycelium to sterilized apple twigs in test tubes to see if the ascigerous stage would develop," he commented in his report of October 14. "I was gratified to find perithecial beaks in the culture on October 13. A microscopical mount made from this culture revealed the presence of Diaporthe asci and ascospores thus confirming with an entirely new culture the results obtained in 1931. I hope that the Diaporthe stage will appear in the other cultures in the near future."

Howard E. Parson, Spring Hill, Ala.

October 14: "Schley pecan trees in our fertilizer experiment with potash and nitrogen for leaf scorch are badly defoliated in spite of the fertilizer experiment....There is a difference apparent but not nearly so striking as a year ago. Last year there appeared to be no difference between the plot supplied nitrogen alone and that supplied a combination of potash and nitrogen. This year the plot receiving the combination appears best, that receiving nitrogen alone next, and that receiving potash alone no different from the check,..."

FRUIT DISEASES

R. B. Wilcox, Pemberton, N. J.

The October 28th report of cranberry and blueberry disease investigations says: "As indicated by our earlier incubator tests, keeping quality seems to bear little relation to submergence of the fruit during the storm of late August. For example, two bogs of the same selection of native Jerseys may be cited. On the older bog, which was not flooded at all in August, the rot at picking time ran about 50 per cent; on the other, which was under water for 7 successive days, the rot was less than 10 per cent; spraying was not a factor in this difference. The same thing has been noted on other varieties."

Paul W. Miller, Corvallis, Ore.

"The early part of the week ending October 28 was spent in studies of the relation of spraying walnuts with Bordeaux mixture for the control of bacteriosis to the quality of the yield," he writes. "In studies carried on in a sprayed Franquette orchard near Scholls, counts showed that there were approximately seven times as many culls due to blight in the crop from the untreated portion of the orchard as that from the sprayed section of the planting. Similar results were obtained in studies carried on in sprayed Franquette orchard near Aumsville, Ore. It would appear from the results of these studies that the quality of the yield from properly sprayed orchards is much superior to that from untreated plantings, the percentage of blighted culls and misshapen nuts due to the presence of blight infections in the husk being appreciably reduced by proper spraying with Bordeaux mixture."

M. A. Smith, Ozark Fruit Disease Laboratory.

"I was much interested in Mr. Pierce's report *of late apple scab infection at Vincennes," he writes October 28. "Late scab appears to be a regular event here. Last year, in spite of the mid-summer drought, there was a considerable amount of scab infection which appeared in September and early October.

"This fall late scab is very much in evidence even in larger amounts than in 1932. In this section it appears that perithecia will develop in these late infected leaves as readily as they do from early season infected ones."

He wrote earlier in the month of harvesting the apple scab experimental plots at Marionville and said: "The data have not yet been summarized so we cannot give percentages but during the grading of the fruit it was very evident that the fruit from the plots receiving the new copper sprays had the best finish."

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*Read the NEWS LETTER and keep up to date! JAF.

POTATO INVESTIGATIONS

The Department's Press Service distributed in October a very interesting story of certain phases of our potato breeding work. Under the title, "Science Helps Maine Grow Better Potatoes," it said, in part: "Potato-breeding experiments in Maine now give promise of overcoming some of the most baffling disease problems of potato growers throughout the country. Aroostook County, Maine, is the largest potato-producing county in the country and is likewise a center of seed production.

"The most notable achievement of the plant breeders thus far is the Katahdin, a variety developed in 1931. It produces a good crop of uniform tubers with shallow eyes, and it has a remarkable resistance to the disease--mild mosaic--one of the most widespread of all potato diseases."

The Katahdin was not actually developed in 1931, of course; it was introduced about that time, had its coming-out party. As with most debutantees, it was born a good many years before this date--probably ten or twelve at least. I will not check up on this as it is nobody's business, anyway, inquiring into a lady's age. And while it may be said to be the most notable achievement in the sense that it is the most notable to get into the spotlight right now, our breeding work has resulted in a hundred or more other varieties any one of which may put the Katahdin's nose out of joint a little later.

This potato breeding work, incidentally, has not been carried on for the purpose of securing improved varieties to increase the potato crop of the country. We are growing plenty already. Our work is directed toward reducing to a minimum the risk to the potato grower by providing him with varieties on which he may depend for a regular yield from year to year. With many of the existing varieties, potato growers are often in danger of losing their entire crop through sudden inroads of this disease or that, and so are in no position to regulate crop production even if the idea met with favor. The Press item we have quoted mentions that varieties resistant to other diseases besides mild mosaic have been developed. "Last year several hundred seedlings were grown in an unsprayed plot to test them for resistance to late blight," it says. "A heavy epidemic of the disease occurred and six of the seedlings showed notable resistance...."

The Katahdin gives decided promise of living up to the high praise of Prof. C. L. Fitch, secretary of the Iowa Vegetable Growers Association. Commenting on a statement that we had spent some $250,000 on our potato investigations--all of them--over a period of 20 years, he remarked that the Katahdin "should pay the Nation 1,000 times $250,000 in larger yield to farmers and less expense to dealers and other handlers."

DISEASES OF TRUCK CROPS

Winning Confidence. Day by day, in every way, we are answering in the affirmative--and in quite a loud tone--the famous questions of the efficiency experts: Does the work need to be done? Is the person doing it the best available person? Is the best method of doing the work being used? Are the results satisfactory? Here is some evidence from Dr. Wm. D. Moore, sent in from Charleston, S.C. on November 4.

"We continue to get more and more calls for help from the local growers," he writes. "The change in attitude on the part of the farmers is well illustrated by the trip recently made to our station by one of the largest growers in this section. Last week he came in with his son, also a farmer, and instructed the latter to study while he was here what we are doing and to follow our advice. And I might add that this same man came in while this report was being written, bringing some diseased plants for me to look over and suggest a control for the trouble. Incidentally, three years ago he was not casually interested in agricultural research.

"Some early planted cabbage has begun to move to market," he says, commenting on the work at the station. "The bean fields have developed rapidly and harvest is now somewhat past its peak. The quality of this crop has been fairly good and, with a favorable market, most farmers have realized good profits from their plantings. The few plantings of fall squash have made good yields and market conditions have been fairly favorable. So far, it is safe to say that all growers have made a profit on their operations. This is quite encouraging and will react favorably to our work as well as to the industry as a whole in this area."

Aerial Photography. A number of our workers in the field have sent in aerial photographs of their stations, etc. Apparently these were secured without charge as we have no evidence that they were taken by the War Department and no vouchers covering charges have been received. In this connection the Secretary of War has lately written the Department to the effect that some of the agencies of the Department have requested the cooperation of the Army intaking such aerial photographs and the Army has cooperated wherever practicable--BUT in some instances the performance of this work by Army facilities has led to criticism by commercial aerial photographic companies who have accused the War Department of competing with commercial enterprises.

The situation is provided for in PBA Circular 80 of August 13, 1927, "Aerial Photography".....It is desirable that Federal Departments requiring aerial photographs obtain in the first place bids from commercial concerns and reserve application to the War Department for cases where commercial offers are unsatisfactory as to performance of price." In future requests upon the War Department for this class of work, therefore, care should be taken to state what efforts have been made to use commercial concerns--and the reasons for preferring the Government (War Department) agency.

ADMINISTRATIVE NOTES

Publications We have referred in another part of the NEWS LETTER to a number of interesting papers contributed by our workers to publications outside the Department. Such publication is often the quickest way to get information immediately into the hands of those who can use it effectively. We have taken full advantage of this medium for years. Since the restriction on the use of white paper reduced somewhat drastically official publications last year, I was interested in looking through the progress reports of last spring to see just what we did during the year in the way of publication.

I find, roughly, that we contributed 125 papers to outside publications and proceedings! In addition, at the time these progress reports were handed in, we had nearly 100 papers going through the mill--either in preparation or submitted for approval of outside publication. Of course, we put through during the year as many official bulletins and circulars as we could--a total of about 30, plus revised editions of some 15 general bulletins. Since the value of the Division rests to a considerable extent upon its ability to get its product (information) into the hands of the consumer promptly, I feel that we have considerable reason for satisfaction over this record.

Incidentally, in submitting papers for approval of outside publication, remember that Doctor Auchter needs two carbons--one for his file and the other to be sent, through Doctor Taylor, to the Office of Information. It is desirable, where practicable, that the original MS be sent along also so that it may be returned with official approval, plus suggestions for changes if any are considered desirable. Papers should not be offered for publication in advance of approval, but there is no objection to a preliminary discussion with the publishers--in fact we prefer to have information, at the time the manuscript is submitted to us, concerning the publication in which it would appear, compensation, if any, etc.

In the matter of official publications, it begins to appear that we shall have to find a substitute for the term "galley proof" where telegraphic mention is essential. Lately we have been much puzzled over a request from the field for "valley fruits," and some years ago we were completely demoralized by a wire announcing that one of our workers was "sending ballyhoos immediately." We found out later that this man, just returning from Egypt with a shipment of date offshoots, had found that he would be delayed in New York City for a few days and was merely telling us that he was sending on the galley proofs of a bulletin. But we had the quarantine officers lined up and awaiting anxiously the arrival of Egyptian date offshoots bearing the odd name "Ballyhoo." They never arrived, which was unfortunate, as the Department then (as now) could have used ballyhoos to advantage!

ADMINISTRATIVE NOTES

Financial Statements

"In order that our Business Office may cope with the increased work incident to new construction and reconditioning activities being financed with N. R. A. funds," says a memorandum for Section Leaders, sent out by Doctor Auchter, "it has been found necessary to issue the regular project financial statements every two months instead of monthly." A statement will be sent out December 1, and another February 1, etc. From what we can understand, this arrangement will meet with the approval of most of our project leaders, who are glad to have the bad news arrive less frequently! But it is all the more reason for keeping a close check in each section to see that allotments are not exceeded.

It will also be necessary to discontinue sending field men monthly transcripts of letters of authorization accounts for checking purposes. As a substitute for this, however, the Business Office will be glad to have field men send in from time to time their letter of authorization account sheets to be checked with our records here and necessary corrections made. It is, in fact, urged that this periodical check be made as it is important that authorization accounts be correct in order to avoid overdrafts on authorizations. It is believed that all of our field men are using the special forms supplied by the Business Office. If additional copies are needed, Mr. Swartz will be glad to supply them.

Of course, the service curtailment outlined is intended to be for a temporary period, in order to avoid delays that would occur in payment of reimbursement and public service vouchers, the issuance of letters of authorization, purchase requisitions, etc. As soon as possible we will resume issuance of financial statements and monthly transcripts of authorizations.

Vouchers for Gasoline, etc.

A considerable number of vouchers, Form 1034, covering purchases of gasoline, are being returned by the Bureau auditor for completion in view of the fact that they do not show whether or not the State gasoline tax was paid, or are not accompanied by a copy of a tax exemption certificate. Tax exemption certificates should be issued in every case where they are acceptable to the dealers, and the copies should be attached to the voucher, thus eliminating the necessity of making a statement on the voucher as to whether or not State tax was paid. If certificates are refused and it is necessary to pay the tax, the voucher should be signed and submitted in duplicate and should show as a separate item the amount of tax and the tax rate per gallon charged. A statement that the dealer refused to accept tax exemption certificates should also be made, and it should also be shown whether the tax is paid directly to the State or to the wholesale dealer.

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THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T E R .

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.

John A. Ferrall, Editor

This NEWS LETTER is for distribution only to employees of the Division and the material contained in it is of an informal and confidential nature and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and are not necessarily the official and final word on the subject.

Vol. V. Washington, D. C., December 1, 1933 No. 23

Painting the Lily! The matter of gilding butterflies does not come within our province. We may safely leave this to the workers in the Bureau of Entomology--or perhaps in the Department's paint shop. But when it comes to "painting" and improving the lily, we need go no farther than the workshop of Dr. David Griffiths.

One of the many-sided aspects of his bulb culture investigations is well brought out in a letter recently sent out by Doctor Taylor to 122 lily growers who received propagating material intended to serve as foundation stocks for their cultures. Due to the necessity for cutting down stocks, the placement of material of this kind has been greater this season than any other. This work, while strictly a side issue, is considered of great importance to the industry. It has been continued for the past ten years.

Most horticulturists may not realize the difficulty of getting up stocks of some of the desirable lilies. The acquiring of foundation materials is often beyond the ability of the grower. Especially is it difficult to acquire stock in sufficient volume to enable the grower to accumulate enough material to begin selling in time to appease his hunger. The accumulation of stock from a $2 to $15 bulb is not simple even in the lily, which possesses methods of stock increase superior to most plants. Doctor Griffiths' bulb investigations section has been able to assist vitally and economically in the accumulation of lily stocks in this country. Small cultures of seedlings are necessary in its work. Where possible such cultures are enlarged so that there is enough to contribute to the foundation stock of growers if the variety or varieties prove worthy. That is the way it is done.

As an illustration: Messrs. Dorsett & Morse secured in Japan about six ounces of seed of Lilium cordifolium, a lily which is all but unknown in this country. This was planted at the Bellingham, Washington, bulb station about three years ago in a bed three feet wide and sixty feet long. The stock was not moved from the seed bed until this autumn, when it was found on digging that there was all the stock the station needed for its cultures and over 4,000 seedling bulbs besides. This has given our clientele about 30 bulbs each, thus probably establishing the lily in America.

The past season witnessed the enrichment of the lily collections in the Northwest by nine varieties and a total of nearly 30,000 bulbs in this manner. A few of these were not rare, others could not be secured from any other source. Some were novelties originated at the station. As examples, Cyrus Gates and Peter Puget can be cited, both of which are the Department's hybrids of West-coast lilies. This makes seven hybrid lilies sent out from the station in the past few years. The five which were first placed with growers some years ago are now offered for sale in limited numbers. They are: Shuksan, Kulshan, Douglas Ingram, Sacajawea, and Star of Oregon.

Our contribution in the case of such a common (at the present time) lily as the Regal is not a minor one. About the time of the disaster to the Farquhar stock on Cape Cod, Doctor Griffiths secured one bulb of the Regal lily. A crop of seed was produced and a part of it grown. When this progeny was two year's old it yielded five pounds of seed. For five or six years immense crops of seed were produced. One year the yield was fifty pounds. During all of this time every crop was placed in the hands of growers, until they had a production of their own sufficient to supply the demand. Now the lily is shipped eastward in tremendous quantities. It has left the Pacific coast in car lots, and there are large productions in the Great Lakes, Tennessee, and the eastern Seaboard regions.

Lilium parryi, one of the best of our yellow lilies, has been difficult to accumulate sufficiently for quantity production. A dozen bulbs which came as a gift yielded a crop of seed four years ago. It was all planted in about twenty six-inch rows across a three-foot bed. The stock remained in the seed bed two years and was then dug and spaced for two years longer, when it occupied four beds three feet wide and 42 feet long. This year, after the station's needs were supplied, there was stock enough so that 120 growers could get 50 mature bulbs each.

Unless there is some special reason, the stations of Doctor Griffiths maintain but little stock, no more than enough for breeding, after growers are known to have a good start of the particular kind.

Such placement of stock as this is a little unusual, but not entirely out of line with the Department's practices. It is believed that the exigencies of the situation demand some such practice in order to get the novelties originated by the Department (as well as the rarer and more difficult to secure) sufficiently established to make them available commercially. The Department is fortunate in having contiguous to its operations two live growers' associations ready and anxious to take charge of the propagation and distribution of all material entrusted to their care.

As will be seen, the plan adopted is particularly applicable in the case of the lily, and has not been attempted with any of the other bulb industries. It is not necessary to pursue such a plan with daffodils or tulips, largely because stocks of commercial varieties are readily available. In the case of the lily, however, stocks must be brought together from widely separated regions and often in very limited quantities. Again, lack of experience in growing new crops, lack of judgment regarding adaptability to climatic conditions, and the necessity for winter protection, often result in disaster, making necessary a new start.

Among the lilies included in the distribution are Peter Puget, originated at the United States Bellingham Bulb Station, Bellingham, Wash. from cross pollination of Lilium parryi on L. pardalinum, the stock for distribution having been worked up from a single seedling, the only one preserved from this cross; Cyrus Gates, a first generation seedling (L. pardalinum x L. humboldti magnificum); L. davuricum, 3-year old seedlings dug from the seed bed; L. cordifolium; L. leucanthum--our stock of L. leucanthum came to this country as seen from the canyons leading off of the Yang-tse gorge above Ichang, China; L. parryi; L. pyrenaicum rubrum; L. martagon purpureum; and L. tigrinum Malmo.

L. tigrinum Malmo has rather an interesting history. Some years ago Mr. R. C. Malmo planted a considerable block of Japanese tiger lilies which remained unsold the previous autumn. Doctor Griffiths happened to visit the nursery when these were in blossom. One plant appealed to him as having deeper colored flowers and a somewhat different bulbil characteristic than any known to him. Mr. Malmo kindly allowed him to take such bulbils as he desired. Doctor Griffiths selected eleven of the best from this plant. This is the basis of the stock sent out. The tiger lily is imported in rather large quantity each autumn, but it is the so-called Fortunei giganteum that we get. L. Tigrinum Malmo is a better lily, in Doctor Griffiths' opinion. It is more robust, is deeper colored, has different bulbil habits, and makes a much better bulb which has better staying qualities with us.

FRUIT AND NUT PRODUCTION

H. L. Crane, Albany, Ga.

"In the Albany district the harvest is much smaller than was expected earlier in the season," says the report for the week ending October 28. "This is especially true of the Schley variety. The low yields seem to be due to a combination of factors which are:

"(1) Shuck worm infestation which has been extremely heavy, causing the nuts to drop and to be poorly filled;

"(2) Dry weather. Little or no rain has fallen since the first of September, and the nuts have suffered greatly for water. The shucks have been wilted now for over a month. This moisture condition coming at the critical period of filling is very largely responsible for the light or poorly filled nuts at harvest; and

"(3) Loss of nuts through activity of the birds. Due to the small crop, the proportion that has been carried off by crows and blue jays has been quite high."

U. S. Pecan Field Station, Shreveport, La.

"Work of remodeling barn into nut handling house has been completed so far as funds permit," says the report of November 4, "We were not able to do all we had planned, but we succeeded in making a very good arrangement for handling pecans.

"A visit was made to the orchard of Mr. S. H. Bollinger near Shreveport and we found he had a very good crop of pecans, probably of better quality than in any other orchard in this section. We found every Schley tree in the orchard affected with a bunchy growth which has been called rosette, but which has different characteristics from the typical rosette. This type has not responded to zinc treatment."

Geo. P. Hoffman, Meridian, Miss.

"Our cover crop project continues to attract wide attention, "he writes on October 28, "and there is already evidence that this soil building project will be reflected on nearby farms. The owner of an adjoining farm--a 100 per cent cotton farmer-- is planting 1200 lbs of vetch at this time.

"We are planning to visit next week a grower who claims to have a planting of 5,000 apple trees, located near Bay Springs, Miss."

FRUIT AND NUT PRODUCTION

C. P. Harley, Wenatchee, Wash.

"The soluble arsenic injury does not appear to follow any special spray program as it occurs generally throughout these districts. However, there is a tendency possibly for the fruit sprayed with manganese arsenate and other more soluble forms to show the burning to a greater degree than where oils were used in combination. The rot sometimes is subtle in its activity. Some specimens show just a slight trace of burning on the calyx lobes and will avoid detection unless the flesh is cut into. A water-soaked area is then found beneath the calyx which indicates that the rot organism has already started its work."

Olive Growing Here at Washington we are uttering prolonged cheers over the issue of a revised edition of "Olive Growing in the Southwestern United States," by C. F. Kinman. During the past six months, in particular, there has been an--er--epidemic of requests for information concerning olive growing, and with the supply of the old edition of the bulletin(Farmers' Bulletin 1249) exhausted, it meant letters where the publication would have answered. Thanks, Mr. Kinman--and a Mery Christmas to one and all!

The introduction of olives into southern California took place 150 years ago, but it is only within the last two decades that the olive industry has assumed a place of importance with us. It can, of course, be grown successfully only in comparatively mild climates, but the dry atmospheric conditions of California and the arid Southwest, where the temperature range is favorable and where irrigation supplies the necessary soil moisture, appear to meet the requirements of this crop.

Strawberries. Rosemary may be for remembrance, but it can't take the place of the strawberry in a shortcake--at least it shouldn't--not in our opinion, or in our shortcake. So we welcome along with the olive bulletin revision, a new edition of "Strawberry Culture: Eastern United States," which is Farmers' Bulletin No. 1028, by George M. Darrow.

The strawberry is the most popular of the small fruits--at least that is Doctor Darrow's contention, and we are not trying to start an argument. It is produced on a large scale for market in many localities, and is found in almost every home garden. This bulletin discusses commercial methods in the eastern United States, the territory including approximately one tier of States west of the Mississippi--that part of the country where farm crops are usually grown without irrigation--but not including the South Atlantic and Gulf coast region.

FRUIT AND NUT PRODUCTION

Elmer Snyder, Fresno, Calif.

"Mr. Harmon has been continuing root system studies on various scion and stock combinations during the November 6-18 period," he writes under date of November 18. "Some very interesting data are being obtained, especially on the distribution of roots, angle of penetration, size of roots, and horizontal spread. In addition, drawings are made and photographic records taken of each vine as the roots are dug. Tracings have been made of the scion size in horizontal section and the same with the stock and the area obtained by a planimeter. The vines available for this work included standard varieties, newer introductions and others grafted on straight species of wild vines and on the better known hybrid stocks. The age of the vines vary from 25 to 30 years from the date the stock was planted and grafted."

C. E. Schuster, Corvallis, Ore.

Writing on November 18th, he says: "The past two weeks have been spent in various activities, among which has been an attempt to find a cause from soil or cultural practices of the so-called 'red' nuts among the walnuts. All the information available in past years does not seem to hold this year. Red nuts seemingly appear any place, under almost any conditions.

"The quality of the walnut crop is exceptionally poor. Not only are the shells colored red, but the filling is very light. There is a difficulty in obtaining a white color on the meats, and so many crops have been so light in the kernel that they have not even been graded at all."

B. G. Sitton and J. L. Pelham, Shreveport, La.

"First harvest of the plots in the Fullilove orchard yielded 10,000 pound, which is about half of the nuts carried on the plots," says the report of November 18th. "Harvest from trees in pruning block indicates that the pruned trees had a smaller yield but that the size and quality of the nuts was slightly better.

"Harvest from the plots in the Chase orchard totalled more than in previous years, and there was a marked difference between the yield of the check and fertilized trees."

FRUIT AND NUT PRODUCTION

C. F. Kinman, Sacramento, Calif.

"In the orchard where we saw some bark decay in cherry tree crowns, I examined a number of weak trees and found that the type of bark decay that was present a couple of years ago did not progress above the union with the trees on Mahaleb stock. In the case of Mazzard stock, the disease went on down into the roots.

"Looking over my soil temperature curve that was made from readings at one and two-foot depths in connection with root growth studies, I note that in none of the seven pits where temperatures were taken did the temperature at either one or two-foot depths differ more than one degree with the comparative depth in the same pits just a year ago. There has been a range of temperature for the year of around 45° F. at one foot below the surface and a range of five or six degrees less at two feet. Irrigation and exposure of the surface to the sun had considerable effect on the maximum temperatures."

Change of — In this connection it may be well to note that Mr. Kinman and Mr. Milo N. Wood have moved from their old quarters in the Forum Building in Sacramento and are now located in Rooms 217-219, Federal Building, Sacramento, Calif.

ADMINISTRATIVE NOTE

Change Number of Authorization.--This is just a reminder that when you use left over transportation requests issued under one letter of authorization, and bearing the number of that letter, for a trip or work authorized under another letter later on, you should change the number of the l.a. as given on the transportation request to correspond with the letter under which the expense is being incurred.

Something of a mixup is caused both in our accounting section and in the Bureau's Accounting Office when numbers are not changed, for when the carbon copy of the transportation request comes in, we naturally charge the liability to the letter of authorization whose number it bears. If that number is wrong, the cost is charged to the wrong authorization.

If it happens that the number borne by the carbon is that of a letter of authorization drawn sometime ago and which has been closed and balance distributed to other items, a lot of explaining is sometime necessary.

FRUIT DISEASES

Paul W. Miller, Corvallis, Ore.

"During the week yield records were obtained from a plot of 14 twelve-year-old walnut trees sprayed with Bordeaux mixture for the control of bacteriosis and from 14 untreated trees, respectively. Twice as many nuts were obtained from the trees in the sprayed plot as were harvested from the untreated trees," he announces in his report for the week ending November 11. "These results show that a definite increase in crop yield follows proper spraying with Bordeaux mixture."

Phony Peach : Peach growers should be considerably encouraged by the announcement that by destroying diseased trees and replanting with young stock it is probable that peach growers can anticipate eventual eradication of the disease, even though this may take some years in severely infected orchards.

This appears possible with the methods which have already been developed, but we are not entirely content with these and it is hoped that even better methods of cure and control will be found in the course of our investigations. In the meantime, a Department Press announcement tell us, diagnosis and destruction of the infected trees will allow peach orchard owners to continue in the business with reasonable expectation that they can maintain the quality and substantially the yield of the orchards, and by preserving in the destruction of infected trees rid the orchard of the disease in the course of time.

"This encouragement to peach growers comes as the result of a five year experiment in an infected orchard near Fort Valley in the heart of the Georgia peach belt. In 1929 the Bureau of Plant Industry cooperating with the Georgia State Board of Entomology opened a series of careful inspections in an orchard of 64,000 trees near Fort Valley. Infected trees were marked and removed. These inspections have been repeated each year, with two inspections each season in 1932 and 1933. The first year more than 5 per cent of the trees were marked for destruction. In the season just closed, two inspections revealed only 330 sick trees, or slightly more than one-half of one per cent. This orchard is in a severely infected district. Results indicate, says a field report, that 'given sufficient funds and sufficient time, we can eradicate the phony disease under any conditions.'"

While Federal and State scientists are studying the problem in the hope of control through spraying, breeding, cultivation, etc., as yet the method of diagnosis and destruction of diseased trees is the only method of control they are able to recommend.

FRUIT DISEASES

J. R. Cole, Shreveport, La.

"The growers in the vicinity of Shreveport are making good progress with their harvest," he reports November 11th. "In the Skannal orchard over 8,000 pounds were harvested from twenty-eight trees. Some of the Stuart trees in this orchard have produced over five hundred pounds. The nuts are of excellent quality, also."

J. B. Demaree, Albany, Ga.

Writing under date of November 11, he says: "Sprayed trees of the Delmas variety of pecans were harvested this week. The nuts were only slightly undersize, but were poorly filled. A portion of the trees were sprayed four times and others five times. Scab infactions were kept down to a few scattered spots and scab cannot be blamed for the poor quality of nuts.

"We are now entering the tenth week without a beneficial rain. Weather Bureau records show that the drouth is general throughout southwest Georgia. During October, only .07 of an inch of rain was recorded at Bainbridge, Thomasville and Moultrie. Albany had .55 of an inch during that month."

Graduate School. Dr. A. F. Woods, Director of Scientific Work, and Chairman of the Department's Graduate School, announces that beginning December 4 the school will offer a course in Soil Genesis, Classification, and Mapping, to be given by Dr. Curtis F. Marbut, and to consist of one semester of thirty hours. The classes will be held at 4:40 p.m. on Monday, Wednesday, and Friday, in Room 7310, Building F.

The purpose of the course is to explain the new concept of the soils, including the basis and principles of soil classification of the United States and of the world. This course will include the latest methods to be adopted in Land Classification. The latter subject is much in evidence because of the agricultural crisis new existing.

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

Edwin Smith, Wenatchee, Wash.

"Winesap washing experiments occupied the week ending October 21, and this was followed by a trip to Portland to assist in the loading of the S.S.ATENAS," he writes November 10. "This ship took on a cargo of 84,000 boxes of pears for New York City. Hood River shippers filled the after end of the ship with Anjou pears, while Medford shippers filled the forward end with Bosc and Anjou pears.

"Mr. Ryall was again in Wenatchee November 6th to 9th, to consult with us and members of the Bureau of Chemistry on the problem of fluorine residue removal, after which washing tests were run to determine the effects of various treatments such as $CaCl_2$, Ca(OH)2, NaOH and H_2SO_4.

"We used some Jonathans from Lot 14 to determine injury and, strange to say, to date there has been no apparent injury from H_2SO_4 1.5 per cent, plus light oil 1 per cent at 105°. This may be considered as a preliminary observation, since injury may become apparent after several days storage. Winesaps sprayed with cryolite generally did not show injury after washing, even with HCl.

"Following cold night and bright days at the end of October, the first few days of November witnessed many fruit packers in trouble with high analyses. This was the natural consequence from the rather rapid development of wax. However, during the past week many houses have finished packing and the season has about wound up.

"The weather during the last half of October carried many cloudy days of moderate temperature and several heavy rains. One of the heaviest autumnal rains occurred November 2nd."

TRUCK CROP DISEASES

Wm. D. Moore, Charleston, S. C.

"As a result of our investigation of and recommendation for the correction of the deficiency troubles in this section during the last year, practically all of the fall crops such as cabbage, spinach, carrots, turnips, etc. are now in what is said to be the best condition in several seasons.

"One grower made the statement this week that he had the best cabbage crop that he had ever grown and that he attributed the success of the present one to our recommendations."

ADMINISTRATIVE NOTES

Public Works Purchases, etc. The Federal Emergency Administration of Public Works on October 23d mailed out to Federal Departments and Agencies comments with reference to the provision for preference for local materials in Public Works purchases. Generally the provision for preference for local materials, it says, shall be regarded as giving preference to the areas geographically and economically connected with the locality in which the project is situation. Such areas need not be coterminous with the boundaries of a State.

If the material and products are of a standard character, the award-authorities may, after a fair allocation of orders has been made within the locality, make an equitable allocation of orders for such materials and products without the locality. Particularly should such allocation be made if the work will be expedited thereby. The extent to which orders should be confined to the locality of the project, or be allocated outside such locality may depend upon the acuteness of the unemployment situation in the respective areas. "The preference for local materials is not to be granted in any case where to do so would involve higher costs, inferior quality or insufficient quantities." Consequently, the submission of bids by nonlocal firms should not be discouraged, as such bids are of material aid in determining whether or not the preference of local materials will involve higher costs or inferior quality.

Building Passes, Washington, D. C. Mr. H. A. Nelson, Chief of the Department's Division of Operations, writes that all permanent building passes (for admission after hours to Department buildings in Washington, D.C.) during the calendar year 1933, will be continued in use during the calendar year 1934 unless specifically cancelled by the requesting organization. Washington, D.C. employees should bear this in mind and not turn in their old passes, unless they do not expect to have use for them during 1934.

Per Diem Some of our workers appear to have trouble in figuring their per diem. Perhaps the simplest method is to divide the day into fixed quarters: Midnight to 6 a.m.; 6:01 to 12 noon; 12:01 to 6 pm; and 6 pm to midnight. Travel of less than 6 hours on the day of departure from or arrival at headquarters in connection with a continuous trip of more than one day is considered 1/4 day; more than 6 hours and less than 12, 1/2 day; more than 12 and less than 18, 3/4; all over 18 hours, 1 day. In this way you can figure the trip in quarters: December 1, 1/4, December 2, 3, 4, 5, 6, 7, 8, 4 quarters (1 day) each: December 9, 3/4, etc.

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THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I--M O N T H L Y N E W S L E T T E R

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.

John A. Ferrall, Editor

This NEWS LETTER is for distribution only to employees of the Division, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and are not necessarily the official and final word on the subjects.

Vol. V Washington, D. C., December 15, 1933 No. 24

Toleration Most of us have sufficient fortitude to bear the other fellow's troubles patiently--provided they do not inconvenience us too much. The Christmas season offers entirely too good an opportunity for stressing such things in connection with our official work, to let it pass unused. We want some of this patience and toleration before you expend all of it elsewhere.

Last month Doctor Auchter was compelled to notify you that for the time being project financial statements would be sent out every two months instead of monthly; and that it would be necessary to discontinue for a time the sending of letter of authorization summaries for checking against the field man's records. These actions, of course, have been made necessary by the vastly increased burden of work placed upon our accounting force in connection with NRA and CWA projects. Since we are not permitted to make new appointments to this force, or even to fill vacancies, the workers and such others from our staff as we are able to assign to help from time to time, are under very high pressure. We call upon you at this season, then, to remember that "they also serve who only stand and wait;" and the longer the wait for your salary check or other voucher payment, the greater the service in this emergency. We are doing the best we can, and it is rumored that even the angels can do no better than that, and when you now and then simply have to express your impatience, we'll try to remember that all this extra work is contributing to the putting of, not merely thousands, but actually millions into needed jobs, and forgive you.

Peace on earth--to men of good will!

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

Edwin Smith, Wenatchee, Wash.

Writing concerning a Fieldmen's Association meeting on November 23, he says: "At this meeting the statement was made that mixed spray programs are generally hard to clean. It was also submitted that spray programs which had first brood sprays of fish oil had cleaned readily, as also had spray programs where soaps were used for spreaders. Now they are going to go over the analyses of the various houses and attempt to select those spray programs which were difficult to clean.

"There was a general expression at the meeting that more arsenic burn was being observed in fruit washed with sodium silicate than that washed with acid. Although generally in our experiments we have not seen as much injury in our samples washed with sodium silicate as with those washed with various acid combinations, yet commercially we can believe that the opposite has been the case because those pushing sodium silicate washes have stated that it is not necessary to change the solutions short of eight or ten thousand boxes, and following this advice some packers have used solutions which have not been changed other than to remove the sludge out of the tank. This, coupled with the fact that the present washing equipment was not designed to rinse sodium silicate solutions and therefore more of the solution adheres to the fruit than is generally the case with acid washes, would probably result in more burning.

"During the last ten days Winesaps have been cleaning fairly readily. It was pointed out at the meeting that there are two periods when cleaning is difficult, one being at the beginning of the Jonathan harvest and the second coming toward the end of October when wax begins to form upon the later varieties. After a short period the fruit tends to clean more easily.

"We presume that the rainy weather of this season which kept the surface of apples in more or less moist condition, would have something to do with the ease in cleaning during the past three weeks.

"This district continues to see a great deal of arsenic burning at the calyx end of apples, and this is followed up with blue mold decay. This has made a very difficult position for the industry, and we anticipate the early marketing of many apples on account of it."

Farmer's Income up. The estimates by the State Street Research and Management Corporation in conjunction with the Corn Industries Research Foundation, indicate that the cash income of the American farmer in October, estimated at $588,000,000, rose 44 per cent above his receipts in the same month last year and marked the sixth consecutive monthly improvement.

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

J. R. Winston, Orlando, Fla.

This really isn't a report from Mr. Winston, but comments on some of his work by outside observers. The Department's Press Service last month furnished newspapers and magazines with the news that Florida packers and shippers quickly adopted the new method for control of stem-end rot by treating citrus fruit with borax before coloring. This method, recommended by the Department, consists of dipping the fruit into an 8 per cent solution of borax at 110 degrees F. as soon as possible after the fruit is picked.

Commercial practice has been to postpone borax treatment until after the fruit has been colored, but Mr. Winston has pointed out that many operators are overlooking an essential factor in the success of the new method by attempting to treat cold fruit. For best results in cold weather the fruit should be warmed in a temperature of at least 90 degrees F. before dipping into the borax solution, because the quantity of borax which will adhere to cold fruit is not effective in controlling stem-end rot.

In handling only relatively small quantities of fruit it is possible to use a long soaking tank containing a large volume of the heated borax solution. By careful control of the temperature of the bath the fruit can be brought to the desired temperature by the time it is taken out. In the case of larger quantities this is not practical. It is practical, however, to place the fruit in a coloring room where within a few hours, by the use of steam, it can be warmed sufficiently to make the borax treatment effective. This involves one extra handling, but no material loss of time in coloring, as the fruit can be returned to the coloring room immediately after the borax treatment and will then be at about the right temperature for the coloring process.

Commercial Storage of Fruits, etc. Apparently some of the addressed envelopes for use in distributing Circular 278, "The Commercial Storage of Fruits, Vegetables, and Florists' Stocks," were lost, as some of those listed for this circular tell us it has not been received. The first edition has been exhausted but we hope to have another supply soon and anyone wishing a copy should write to Mr. D. F. Fisher, who will do the rest.

In this connection, "Bruising and Freezing of Apples in Storage and Transit," is about ready to issue as Technical Bulletin No. 370, by Dean H. Rose and J. M. Lutz.

FRUIT AND VEGETABLE HANDLING, Transportation and storage investigations.

Another Patent

Another patent by one of our workers--this time Edward A. Gorman-has been dedicated to the free use of the public. This is Patent No. 1935590, granted to Mr. Gorman to cover a new and useful improvement in mechanical means for circulating air in enclosed spaces. It consists essentially, the NEWS LETTER's editor is assured by technical experts, of a wind operated rotor which can be mounted on the top of a refrigerator car or a storage house and operating a very efficient fan placed inside.

An ingenious arrangement of the fan blades permits operation either for blowing or suction. The apparatus operates in a very gentle breeze--a 4-mile-per-hour wind being sufficient. This invention has distinct possibilities for improving the carrying conditions of fruits and vegetables."

Incubation

Speaking of handling fruits and vegetables and remember-that as the twig is bent the tree is inclined, how the child is influenced by its early environment and training, etc., it is not surprising to learn that our late colleague, Dr. Neil E. Stevens, is still benefiting from the prestige attained as a result of his connection with our Division, or vice versa.

The Daily Digest, quoting from the Forecast for November, says: "....'Fresh' cranberries, of fine quality, are procurable throughout the winter. This is because of an 'incubation' test which such cranberries have been put through, to determine their keeping quality.

"This test, begun several years ago by Dr. Neil E. Stevens..has proved very reliable as a method of forecastin the keeping quality of the fruit.

"It consists of keeping pint samples of cranberries in an electric incubator for a week early in the picking season. They are kept warmer than in ordinary storage, and this hastens the ripening and decay which normally occurs over a longer period. The spoilage of the samples indicates approximately the general spoilage to be expected in storing the crop. The keeping quality of the fruit varies widely from year to year and the tests aid growers in deciding how best to handle the crop..."

In view of Doctor Stevens friendly cooperation with the NEWS LETTER in the dear, dead past, we are pleased to note that the Forecast published the article in November, so that Thanksgiving diners, where cranberries were available, could be duly thankful for his help.

BULB INVESTIGATIONS

Lily Hybrids — Completed records of lily hybridizations made the past season at the Bellingham Bulb Station have just been checked over. Between May 1 and August 31, there were made 112 crosses each of which produced seed that looked as though it might grow. The crosses which did not take are not enumerated. This simply means that 112 of the cross pollinations set seed, the seed has been planted, and the plantings have been mulched for the winter. Most of the lots will come up in the spring; a few will wait over until the next year. We plant lily seed at Bellingham any time of the years except from June to August.

The quantity of seed produced, of course, varies greatly in the different lots. The largest amount was of two fine, clean, unselected hybrid progenies. The seedlings of each of these were crossed among themselves. One produced two pounds of seed, the other one and one-half pounds. These two hybrids are in such high esteem that all the seed was planted. Best results are to be expected from large progenies. The possibilities from the crossing of two species can not be expected to be well covered by a few plants.

The growing to maturity of such a vast number of seedlings will be something of a task. The material will remain in the seed beds with few exceptions for two years. It will then be dug, reset, spaced, and left undisturbed for two years longer, when most of the seedlings will have reached maturity and be ready to be evaluated and selected for the establishment of clonal varieties. The hybrids of this season alone will occupy not less than a half acre of land when dug from the seed bed, if ordinary expectations are realized.

It is encouraging that many pollinations have taken which have been failures in previous years. Apparently pollen of both *Lilium longiflorum* and *L. browni* have produced seed on a number of varieties.

It will be realized that the culture of such large progenies of many crosses may easily become burdensome to handle, so selections are made as early as it is safe to do so, the plan usually followed being to make the selections at blossoming the fourth year. This requires a minimum of labor in the culture. The space occupied the first two years in the seed bed is small. There are often a hundred bulbs in a row across a three-foot bed and the rows are not over six inches nor less than four inches apart. Some blossom occurs in many varieties the second year in the seed bed. It is by avoiding the next shift at the close of the fourth year with a multiplication of the space three to six times more that labor is saved.

BULB INVESTIGATIONS

(continued)

Selections are made when the seedlings are in blossom and ready to be moved again the fourth year. The selection of desirable seedlings is liberal and further culling occurs in subsequent years.

When selection was made of our first large progeny of West-coast lilies, over thirty seedlings were picked out. Seven of these are now in the hands of nurserymen. Certainly not over five more will be kept. This fourth year selection reduces the stocks of even large progenies to less than, we will say, fifty bulbs, and this number will be divided by two to four and more than likely by eight in the next two or three years. However, propagation for the purpose of building up stock begins with the fourth year selection and continues as rapidly as possible until sufficient stock has been accumulated. Three or four acres of land on this basis accomodates a lot of lily hybrids.

TRUCK CROP DISEASES

Wm. D. Moore, Charleston, S. C.

"We continue to get numerous calls for help on all crops, particularly for the deficiency troubles on cabbage and spinach during the past ten days," he reports under date of December 9th. "As an example of the need of a careful check on all soils, one man came in this week with several soil samples to be run for their pH reactions, some of which ran as low as pH 3.2. None ran higher than pH 5.4. This particular grower could not understand why he had not been able to get plants to grow on certain of his fields, yet we could see the reason after working for fifteen minutes with his samples. Needless to say, we had a convert within a very short time after showing him his trouble. While this is probably an extreme case, it is fairly representative of hundreds of farms and farmers of this area."

He had written on November 25th that activity last season in diagnosing and recommending a corrective for the deficiency troubles, such as magnesium and manganese, is showing marked results in the quality and yield of the crops being harvested. "One grower stated last week that he is getting more than a 30 per cent increase in yield of cabbage, and the best quality in his entire experience in the trucking business, all of which he attributes to our correcting his troubles," added Doctor Moore. "Other crops showing improvement are spinach, carrots, and turnips."

FRUIT DISEASES

Leslie Pierce, Vincennes, Ind.

Writing on November 18th, he reported: "The temperature fell below freezing every night during the week. A minimum temperature of 17 degrees was recorded each night on the 14th and 15th. This period of cold weather has apparently checked the activity of the canker disease which has destroyed so many apple trees in this and other fruit sections in the Middle West. With the exception of a single oozing canker noted early in the week, the moist, dark-colored exudation present on the trunks of many of the trees the previous week had dried, leaving dark brown blotches on the outer bark.

"An incomplete survey of orchards within a radius of five miles of Vincennes indicates that by mid-summer next year the outbreak of trunk canker will have caused the death of approximately 1,200 bearing Grimes trees. Excepting one orchard, varieties other than Grimes were not examined. In the one orchard where all of the varieties in the planting were examined, the disease had killed a fairly large number of Duchess, Winesap and Rome, and a few trees of other varieties topworked on Willow-twig and York. If the damage to Duchess, Winesap and Rome is proportionately as great in all of the orchards in the section, the loss in the area examined will total at least 1,500 trees."

H. F. Bergman, Amherst, Mass.

"The beneficial effect of spraying is more evident now than it was a month ago," he writes November 18. "Berries from plots on three different bogs are now in very bad condition, those from check plots on one bog are all rotted. The tests again show that two applications of Bordeaux are as effective as three. In spite of our results to date, Doctor Franklin is opposed to spraying in Massachusetts, but I think that on a considerable number of bogs two applications of Bordeaux would be very profitable. I am planning next summer to arrange with two or three growers to spray bogs with the regular commercial spray outfits."

Howard E. Parson, Spring Hill, Ala.

Report of November 25: "Cracking records have been made from the nuts harvested from Stuart pecans sprayed against leaf spots. It was found that nuts from trees sprayed late in the season were inferior in quality even to those harvested from check trees, which defoliated early. "In previous reports it has been noted that trees in this plot also suffered most from attacks of black aphids, were more severely infested with shuck worm, and matured their crop later than trees in the other plots. The trees sprayed early had nuts slightly better in quality than nuts from check trees. A grower in Baldwin County, Ala. has also been complaining of harvest of inferior quality from Stuart trees sprayed with Bordeaux mixture in connection with controlling black apids, leaf case bearer and leaf spots."

FRUIT AND NUT PRODUCTION

Elmer Snyder, Fresno, Calif.

"Grape seeds saved from controlled grape crosses and from selfed seedlings have been counted and preparations made for the growing of these seeds during the winter months," he writes December 2.

"The best percentages of germination of grape seeds were obtained last season from plantings made December 1st. Plantings made at 15-day intervals previous to this time and following this date did not give as high germination percentages. This season approximately 6,000 seeds were obtained from the crossing work. Additional seeds saved over from last season for the testing of germination studies of old seed will also be planted this season."

Ordinary Steam Sterilizes Greenhouse Soil Beds. Under this heading the Department's Press Service recently sent out a note to the effect that although high pressures increase the quantity of steam that can be forced through pipes leading to greenhouse soil beds, the degree of sterilization obtained with high pressure steam as compared with low pressure does not warrant the more expensive types of boilers and the attention needed to operate them.

This is the opinion of Arthur H. Senner, of the Bureau of Agricultural Engineering. "Owners heating greenhouses with ordinary low pressure steam can use their heating plans to sterilize soil beds effectively by making slight changes in mains," the notice continues.

"Senner has just finished a comparative study of high pressure and ordinary low pressure systems for sterilizing greenhouse soil beds. He obtained soil temperatures of 212 degrees F. with steam at all pressures between 2 and 150 pounds per square inch at point of delivery and found the moisture content of the soil after sterilization practically the same in all cases. Higher temperatures were obtained only by using superheated steam and increasing the time of application with materially increased the expense.

"In all tests with ordinary steam, the time required to obtain temperatures of 212 degrees F. depended on the quantity of steam supplied and was not affected by pressure."

Greenhouse soil beds are sterilized, of course, to destroy plant diseases, insects and weed seeds.

FRUIT AND NUT PRODUCTION

B. G. Sitton and J. L. Pelham, Shreveport, La.

"Harvest has been completed on the plot on the Chase orchard," says the report of November 25. "A yield of 4,749 pounds from 81 trees was recorded. This is at a rate of approximately 800 pounds per acre even including the yield for the check and two low-yielding fertilizer treatments. This yield shows quite conclusively the benefits to be derived from good orchard management, including fertilizing, spraying and cultivation.

"Additional nuts harvested in the Fullilove plot during the week brought the yield up to slightly over 18,000 pounds and we estimate there are approximately 4,000 pounds of nuts more yet to be harvested on this plot. This will bring the yield here up to approximately 800 pounds per acre. The trees in the Fullilove orchard are much larger than those in the Chase orchard and the soil is much heavier, which emphasizes the exceedingly good yield secured on the Chase orchard."

Atherton C. Gossard, Spring Hill, Ala.

Writing on November 18th, he says: "A final small harvest was made from the rosette experiment in the C. H. Dees orchard near Grand Bay, Ala. Die-back of the ends of the branches is becoming quite noticeable in this orchard now. Mr. Parson and I have not been able to detect any differences in the rosette on the trees treated with zinc sulphate and those not so treated. The trees, however, are much larger and more badly rosetted than those in the Dantzler orchard at Biloxi, Miss. which received the same amount of zinc sulphate, and on which some differences have been observed."

Air Mail at Meridian! There may be something in the theory that you can't keep a good man down, but, on the other hand, you can bring him down if you make your headquarters of sufficient importance. Hence we are not one bit surprised to learn that beginning with November 18, regular air mail service was inaugurated with Meridian, Miss. as a regular stop on Air Mail Line 33. Please make a note of this.

Sure, Meridian, Miss. is famous as the location of the U. S. Pecan Field Station, with Mr. Geo. P. Hoffman, associate horticulturist on the ground and ready to welcome the air mail flyers. It is a "come down" for the flyer, you understand, not us.

FRUIT AND NUT PRODUCTION

W. W. Aldrich, Medford, Ore.

"Casual inspection of the Anjou blossom buds formed for next season shows striking plot differences," he writes on November 20. "There appear to be 70 to 80 per cent more blossom buds in Frequent Late (dry during June and early July) than in Frequent (not dry during this period). Ringed limbs, either defoliated to 10 leaves per fruit or thinned to 100 leaves per fruit, show that between May 29 and June 13 was the period determining a large amount of the blossom bud formation. This apparent early differentiation explains the large amount of bloom in 1933 from ringed limbs with 10 leaves per fruit after June 10, 1932.

"Our Bartlett trees, which bore a moderately heavy crop this season, show relatively few blossoms buds for next year. My early thinning apparently had no effect upon the amount of buds formed this past June or July. A look around the Valley revealed many Bartlett blocks showing a similar paucity of blossom buds for 1934."

ADMINISTRATIVE NOTES

Automobile Mileage

In a memorandum to Chiefs of Bureaus and Offices, dated November 28, the Director of Personnd and Business Administration for the Department says: "An impression has prevailed in many of our Bureaus, if not generally throughout the Department, that in fixing the mileage rate for use of personally owned automobiles, account could be taken of the fact that one or more employee of the Department were to accompany the owner on the trip or a part thereof, and that in view of the net saving in transportation costs thereby effected, a higher mileage rate was warrented than would have been fixed for the travel if performed by the owner alone.

"For instance," Doctor Stockberger continues, "if to meet bus or railroad fares, the highest rate for the traveler alone would have been three or three and one-half cents per mile, it has been assumed that if one or more employees were officially transported, the maximum rate, formerly seven cents, now five cents, might properly be allowed.

"This idea, so far as it has been entertained, must be discarded in the future by virtue of decision of the Comptroller General to the Secretary of Treasury of June 27, 1933, A-49323. The doctrine laid down in this ruling is that the mileage should not exceed the rate properly allowable for the owner's individual travel without regard to transportation incidentally furnished one or more other employees in performance of official travel. Exceptions have already been made by the General Accounting Office in Department accounts on the basis of this new ruling."

ANNUAL REPORT OF CHIEF OF BUREAU

Although Thanksgiving Day has come and gone, we are still being thankful for things here and there, the latest being the generous way in which the Division's work is treated in Doctor Taylor's report for the fiscal year ended June 30, 1933, the report having been made public on December 11.

Doctor Taylor again emphasizes the fact that the control of plant diseases through the breeding of resistant varieties, an outstanding feature of our work, while less spectacular than some other agricultural achievements, is proving to be the most economical and most effective method of avoiding increasing losses in regions where climatic and other factors require large acreage of the same crops year after year. "In the development of the disease-resistant crops not only the advantage of disease resistance is secured," he points out, "but improved quality may be secured at the same time by plant breeders."

Considering the limitations in the matter of space, it is amazing how much material has been packed in the report. Phases of our work which are touched upon include a discussion of the factors affecting color in apples, stocks for Satsuma oranges, Navel Orange scab, stem-end rot, the new discoveries in connection with the effect of different kinds of pollen on the size and time of ripening of dates, growth and development of peaches, and stocks, pear transportation, protection against freezing, storage and handling of the Kieffer pear, the importance of the new strawberries, including the Blakemore, the first selection to be named and introduced as a result of our work, the frozen-pack investigations, carbon dioxide in storage of fruits and vegetables, etc. And three paragraphs for frozen-pack investigations, about the same as the space given to wheat, which shows how we are progressing! (H. C. Diehl, please note!)

From the standpoint of such a primitive mindas that of the NEWS LETTER's editor, who is shocked at any attempts to hide lights under bushels, it is extraordinarily gratifying to find that the Press Service shares Doctor Taylor's views on the importance of the fruit and vegetable work, and its release to the newspapers and press in general just lets the public in on the fact that this is an up-and-hustling organization, paying its way and earning its feed.

Commenting on Doctor Taylor's remarks relative to the importance of breeding resistant varieties, the Press notice says: "Several varieties resistant to pests and diseases are mentioned in the report because there were definite advances during the year, either in the development of the strains or in getting the new varieties into the hands of growers.

ANNUAL REPORT (continued)

"Some of these are: peach stocks resistant to root injury by nematodes; cabbage resistant to yellows and other diseases; improved varieties of lettuce and muskmelons which produce good crops in spite of invected soils....sweetpotatoes practically immune to stem-rot, etc.

"The Bureau has continued its work of breeding, selecting and developing farm products that are of better quality than have been available. Some of these are developed with a view to special uses, as for frozen pack, for long distance shipment, for home orchard use, or to make better use of certain types of soil. The Golden potato, for example, is a yellow-fleshed variety which derives its color from parent stock introduced from the native home of the potato in South America. This and the Chippewa, another new variety, are resistant to many potato diseases. The Katahdin variety introduced two years ago has further demonstrated its excellence under a wide range of conditions although not desirable in all sections.

"The year included the release for commercial scale planting of three new strawberry varieties--Dorsett, Fairfax and Narcissa--which supplement four other new varieties--Blakemore, Bellman, Southland, and Redheart--introduced recently. The new varieties are productive and of superior quality. The Dorsett and Fairfax are recommended for trial in the East and the Narcissa in the Northwest.

"Investigation of the frozen pack method of preserving fruits showed that very low temperatures are not necessary and in some cases may even be undesirable. Freezing at ordinary cold storage temperature should make possible a wider development of this method as the market develops and as packers learn the varieties most suitable for freezing." (That is certainly packing a lot of information, fraught with the most extraordinary possibilities for fruit and vegetable growers and handlers, in a couple of sentences! Ed.)

"Northwestern pear growers have always had difficulty in shipping fruit in winter. Freezing ruins the pears and provisions of artificial heat is likely to injure the quality of the fruit. Bureau transportation expert discovered it was possible to avoid both troubles to a great extent by spreading a layer of sawdust on the floor of the car and soaking it with water. This water will freeze before the juice of the fruit and will liberate enough heat to keep the pears safe in most cases. To the pear growers of the Northwest this means a potential saving of $10 to $12 a car in transportation costs. Other discoveries in precooling and refrigeration of fruit have enabled shippers to increase the loading of cars and to reduce the need for re-icing in transit. The report also notes the control of certain storage diseases by a carbon dioxide gas treatment preliminary to storage.

ANNUAL REPORT (continued)

The notice also discusses the modification of the borax treatment for stem-end rot of Florida citrus fruit, pointing out that it is being generally adopted, with an estimated potential annual saving of at least a million dollars!

"Last year the Bureau made notable progress in controlling the time of ripening of date fruits," it continues. "By applying certain pollen it is possible to delay ripening until weather and marketing conditions are favorable.

"Kieffer pears have usually been regarded as of inferior quality, gritty and tough. The trees, however, are resistant to diseases and produce good crops in the Southeast. Bureau tests last year revealed an unusual characteristic of these pears. By gathering the fruit and storing it at 60 to 65 degrees Fahrenheit, the pears ripen satisfactorily and the quality will approach that of the Bartlett. Temperature must be kept within narrow limits to get good results.

"Experiments with peas for canning show that a plentiful supply of available nitrogen in the soil improves not only the yield but also the quality.

"In Colorado potato fields, tests showed that it pays to handle the crop carefully and avoid bruising and rubbing. Tubers handled carefully keep better.

"Zinc appears to be an effective remedy for the rosette disease of pecans. Applied as a spray, scattered on the ground or injected into the tree trunks, it reduced the injury.

"Bureau scientists found that to prevent bacterial canker of tomatoes, it was only necessary to permit the seeds to ferment in the tomato pulp. This disease is likely to develop from seed extracted by recent machine processes, but is controlled by going back to the older method of fermenting the pulp..."

This Press Notice, of course, was prepared for popular use, and in a form to be interesting to the average newspaper reader. It should help a lot in giving the general public a better knowledge of the vital need for continued work on all phases of fruit and vegetable growing, handling and diseases. Better still, both the report and the press notice make clear that the items discussed are merely examples picked from a very comprehensive list of accomplishments in our field of research.

Vol. 5, No. 24 December 15, 1933

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

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